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This Survey is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.

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The Secretariat's draft report was prepared for the Committee by Ben Westmore and Haruki Seitani, with contributions from Ronan Lyons, Olena Havrylchyk and Andrés Fuentes Hutfilter, under the supervision of Vincent Koen. Research assistance was provided by Lutécia Daniel and editorial support by Sisse Nielsen and Michelle Ortiz.

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BASIC STATISTICS OF IRELAND, 2018*

(Numbers in parentheses refer to the OECD average)**

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million)	4.9		Population density per km²	70.5	(37.8)
Under 15 (%)	21.4	(17.8)	Life expectancy at birth (years, 2017)	82.0	(80.1)
Over 65 (%)	13.9	(17.1)	Men (2017)	80.2	(77.5)
Foreign born (%, 2016)	17.0		Women (2017)	83.8	(82.9)
Latest 5-year average growth (%)	1.0	(0.6)	Latest general election	February 2020	
ECONOMY					
Gross domestic product (GDP)			Value added shares (%)		
In current prices (billion USD)	382.6		Agriculture, forestry and fishing	1.0	(2.4)
In current prices (billion EUR)	324.0		Industry including construction	39.3	(27.3)
Latest 5-year average real growth (%)	10.5	(2.3)	Services	59.7	(70.4)
Per capita (000 USD PPP)	84.7	(47.3)			
GENERAL GOVERNMENT					
Per cent of GDP					
Expenditure	25.4	(40.3)	Gross financial debt (OECD: 2017)	76.0	(109.4)
Revenue	25.4	(37.4)	Net financial debt (OECD: 2017)	47.5	(69.2)
EXTERNAL ACCOUNTS					
Exchange rate (EUR per USD)	0.85		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	0.79		Chemicals and related products, n.e.s.	62.1	
In per cent of GDP			Machinery and transport equipment	14.0	
Exports of goods and services	122.2	(55.5)	Miscellaneous manufactured articles	10.6	
Imports of goods and services	89.0	(51.3)	Main imports (% of total merchandise imports)		
Current account balance	10.6	(0.3)	Machinery and transport equipment	42.4	
Net international investment position	-160.0		Chemicals and related products, n.e.s.	22.3	
			Miscellaneous manufactured articles	9.3	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate (aged 15 and over, %)	58.6	(57.1)	Unemployment rate, Labour Force Survey (aged 15 and over, %)	5.7	(5.3)
Men	64.6	(65.3)	Youth (aged 15-24, %)	13.7	(11.1)
Women	52.9	(49.4)	Long-term unemployed (1 year and over, %)	2.1	(1.5)
Participation rate (aged 15 and over, %)	62.3	(60.5)	Tertiary educational attainment (aged 25-64, %)	46.9	(36.9)
Average hours worked per year)	1 782	(1734)	Gross domestic expenditure on R&D (% of GDP, 2017)	1.0	(2.6)
ENVIRONMENT					
Total primary energy supply per capita (toe)	2.8	(4.1)	CO2 emissions from fuel combustion per capita (tonnes)	7.2	(8.9)
Renewables (%)	10.3	(10.5)	Water abstractions per capita (1 000 m³, 2009)	0.2	
Exposure to air pollution (more than 10 µg/m³ of PM 2.5, % of population, 2017)	2.3	(58.7)	Municipal waste per capita (tonnes, 2016, OECD: 2017)	0.6	(0.5)
SOCIETY					
Income inequality (Gini coefficient, 2016)	0.309	(0.310)	Education outcomes (PISA score, 2018)		
Relative poverty rate (%, 2016)	9.2	(11.6)	Reading	518	(489)
Median disposable household income (000 USD PPP, 2016)	25.9	(23.6)	Mathematics	500	(492)
Public and private spending (% of GDP)			Science	496	(491)
Health care	7.1	(8.8)	Share of women in parliament (%)	22.2	(29.7)
Pensions (2015)	3.9	(8.5)	Net official development assistance (% of GNI, 2017)	0.3	(0.4)
Education (public, 2017)	4.6	(4.5)			

* The year is indicated in parenthesis if it deviates from the year in the main title of this table.

** Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 80 % of member countries.

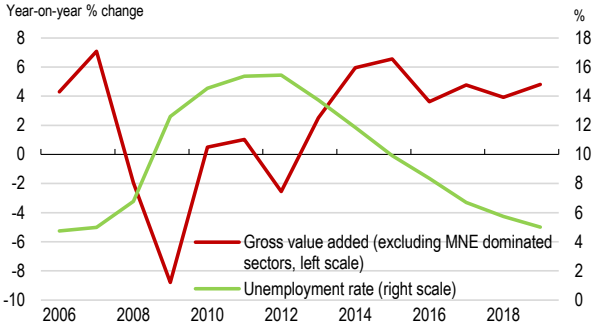
Source: Calculations based on data extracted from databases of the following organisations: OECD, International Energy Agency, International Labour Organisation, International Monetary Fund, World Bank.

Executive Summary

Life satisfaction is high, boosted by recent strong economic performance

The Irish economy has been growing strongly. The unemployment rate has plummeted by over 10 percentage points since 2012 to around 5% (Figure 1) and the average real wage well exceeds the OECD average. Moreover, the highly redistributive tax and transfer system has contained income inequality. Air pollution is low and dimensions of wellbeing such as perceived personal safety and community engagement are high.

Figure 1. The economy has performed well



Source: OECD, OECD Economic Outlook database. MNE stands for multinational enterprises.

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Household consumption has grown steadily, but uncertainty has affected business investment. Job creation and wage gains have encouraged labour market participation. Even so, increased household income has been partly channelled to savings, amid weaker consumer confidence. The prospect of the United Kingdom's departure from the European Union ("Brexit") and the broader slowdown in major trading partners have held back investment. Although housing construction has forged ahead in the face of a dwelling shortfall, spending on non-aircraft machinery and equipment and intangible assets has stagnated since 2015.

Exports have supported the domestic economy. Services exports have been particularly strong but Brexit uncertainty appears to have weighed on sales of chemicals, tourism and some capital goods to the United Kingdom.

Economic growth will moderate, with risks elevated

Growth will moderate over the next two years, in the context of capacity constraints and weaker external conditions. The unemployment rate will decline more slowly, but to historically very low levels (Table 1). Labour market tightening will stoke wage pressures, especially in those sectors where labour shortages are most acute.

Table 1. Economic growth will moderate

	2019	2020	2021
Real GDP	6.2	3.6	3.3
Gross value added (exc. MNE sectors)	4.8	3.5	3.4
Unemployment rate	5.0	4.8	4.7
Core inflation	0.9	1.3	1.8

Source: OECD. Based on the assumption of an orderly Brexit process.

Economic uncertainty will remain very high. Downside risks include an increase in barriers to trade between the United Kingdom and the European Union following the transition period, which could hobble trade activity between Ireland, the United Kingdom and the European Union, undermining domestic consumer and business confidence. Notwithstanding some decoupling in recent years, the United Kingdom remains a key trading partner for Ireland, particularly in the agriculture and food sectors. The nature of the trading arrangement eventually agreed will be an important determinant of Irish economic prospects over the next few years.

Increased protectionism, more generally, would hurt the very open economy. The impact of a negative shock could be exacerbated by high household debt and weak bank profitability, as well as still high general government debt.

The stock of non-performing loans on bank balance sheets remains high. A large share of those that remain stems from long-term owner-occupier housing arrears. These will be difficult to resolve, partly due to slow repossession proceedings, but may be sped up through granting lenders a collateral possession order at a future date.

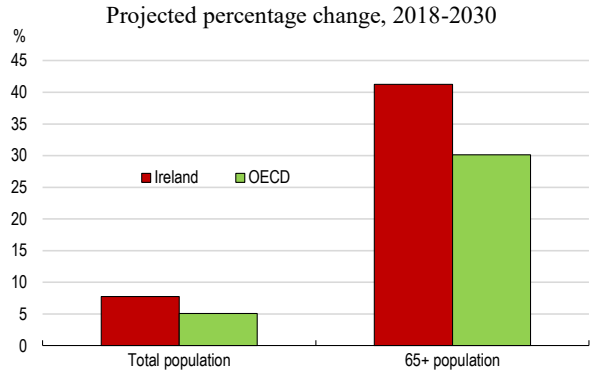
The high share of foreign-owned firms in Ireland is a great asset but also a downside risk to the economy and tax receipts. Such businesses are typically much more productive than their locally-owned counterparts and often have weak supply-chain links with domestic firms. Rising international tax competition and future international tax agreements as part of the OECD Base Erosion and Profit Shifting process could lower the attractiveness of Ireland to foreign direct investment. This highlights the importance of fostering technological adoption and productivity in domestic firms as well as further skill improvements in the workforce.

Fiscal prudence calls for saving windfall tax receipts. Recent improvements in Ireland's fiscal position have largely reflected unexpected corporate tax receipts and interest savings. Non-recurring receipts have been partly used to fund within-year cost overruns in areas such as health and social welfare. Going forward, the government should commit to transferring windfall tax revenues to pay down general government debt or to the Rainy Day Fund. In the event of an orderly Brexit process, the stance of fiscal policy should be tightened somewhat.

The rapidly ageing population will pose new challenges

Ageing will push up public spending and reduce revenues from labour taxes. The population aged over 65 is expected to grow much more rapidly than in most OECD countries (Figure 2). Simulations suggest that public health and pension costs could rise by 1½ per cent of GDP by 2030 and by 6½ per cent of GDP by 2060. To meet these obligations, opportunities for greater public spending efficiency and revenue sources that minimise economic distortions need to be identified.

Figure 2. The population is ageing fast



Source: United Nations *World Population Prospects 2019*.

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Enhanced public spending efficiency is achievable. Health spending per capita is high and recent spending increases have not resulted in greater measured outputs. Budget planning in the health service needs to improve, partly through better adherence to key legislative requirements of budget plans. At the same time, Ireland is the only Western European country without universal coverage for primary healthcare. This contributes to poor disease management and congestion in hospitals. A clearer path to universal access to primary healthcare must be spelled out.

New revenue sources to meet the fiscal costs of ageing should come from tax heads that are less distortionary for economic activity. For instance, recurrent property taxes and consumption taxes could be relied upon more. The authorities should more regularly revalue the local property tax base and streamline the Value Added Tax system, moving from five rates to three. In so doing, the impact on low-income households should be carefully monitored and offsetting policy measures may be needed.

Environmental costs should be better reflected in prices. Environment-related taxation remains low even as Ireland is unlikely to achieve its carbon emission targets for 2020 or 2030. The authorities made welcome progress by raising the carbon tax rate in Budget 2020. Nevertheless, further carbon tax rate hikes will be needed. These should be coupled with other measures such as congestion charging in the busiest locations, abolishing preferential VAT rates for synthetic fertilisers and

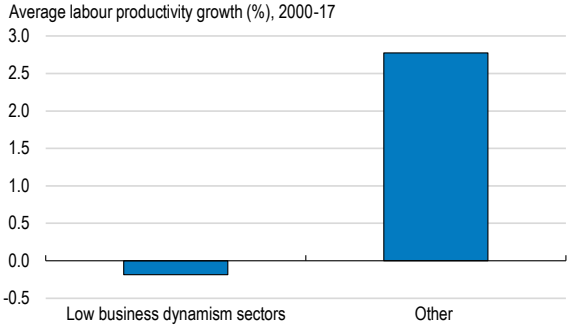
reforms that mitigate emissions from agriculture, such as greater afforestation.

Further technological diffusion presents opportunities but also policy challenges

Technological change is transforming Ireland's economy, leading to new jobs and innovative products that benefit consumers. Further technological adoption by firms will boost productivity if the right skills are available. Policy settings in other areas, including competition and the labour market, need to also be revisited as new technologies spread.

The adoption of new technologies has been uneven across sectors and has had scant productivity impact. Sectors with low firm entry and exit rates have experienced no improvement in labour productivity since 2000 (Figure 3). Further reducing barriers to firm entry will prompt productivity-enhancing technological adoption. Licensing procedures for businesses should continue to be simplified and regulations that restrict the provision of legal services reformed.

Figure 3. Efficiency has not improved in sectors with low firm turnover



Note: Sectors in the bottom third of the distribution for business churn (sum of firm entry and exit) are deemed low dynamism.
Source: CSO, OECD calculations.

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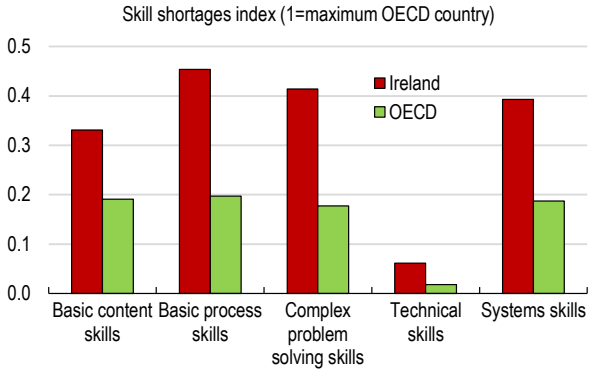
Skill shortages are becoming more apparent (Figure 4**).** Participation in lifelong learning by the low-skilled is low, partly because many see it as unnecessary and unaffordable. Irish businesses also provide less training to employees than those in other OECD countries. To realise the productivity gains made possible by new technologies, complementary skills need to be cultivated. The government should enhance financial assistance for training programmes and fully implement measures that lower barriers to participation, such as promoting flexible working hour arrangements, including through ensuring adequate and affordable childcare. The latter may also promote female labour force participation given that the gender gap in unpaid work hours remains large.

Policies need to adjust to new types of work. Online platforms can be a channel through which technology creates new jobs and allows more flexible work arrangements. However, these new forms of work create challenges for traditional labour market and social welfare institutions that were created based on stable and ongoing employer-employee relationships. Labour market regulations should be broadened to fully cover workers in the "gig economy" and social protection should be harmonised across different types of employment. This will protect the work standards and bargaining power of employees, thereby promoting participation in such work.

Figure 4. Skill shortages are more pronounced



Note: Positive values represent shortages, with the maximum and minimum values among OECD countries normalised to 1 and -1.
Source: *OECD Skills for Jobs* database.

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New technologies have the potential to displace some workers. Indeed, new analysis undertaken for this *Economic Survey* indicates that growth in the intangible capital stock has been associated with an increase in job losses in some sectors. Policies should support the reallocation of workers to new parts of the economy that are thriving. This could be through new training programmes targeted at employees in those enterprises with a high risk of dismissing workers in the near future

due to technological change. Social protection systems that support displaced workers and reorient them towards new jobs should continue to be fine-tuned. Robust evaluations of the effectiveness of activation programmes will be particularly important.

Regional inequalities have been rising, with Dublin accounting for a larger share of economic activity. Nevertheless, the Dublin-born population is increasingly moving to other counties due to escalating dwelling prices in the capital. The reallocation of workers to new high-growth industries will benefit from policy measures that further boost housing supply in thriving regions. These include replacing some existing taxes on market property values, such as stamp duty, with a broad-based land tax to incentivise both labour reallocation and efficient land use. At the same time, policy measures such as *Ireland 2040* are important for establishing strong economic poles outside of Dublin with specialisations that reflect regional endowments.

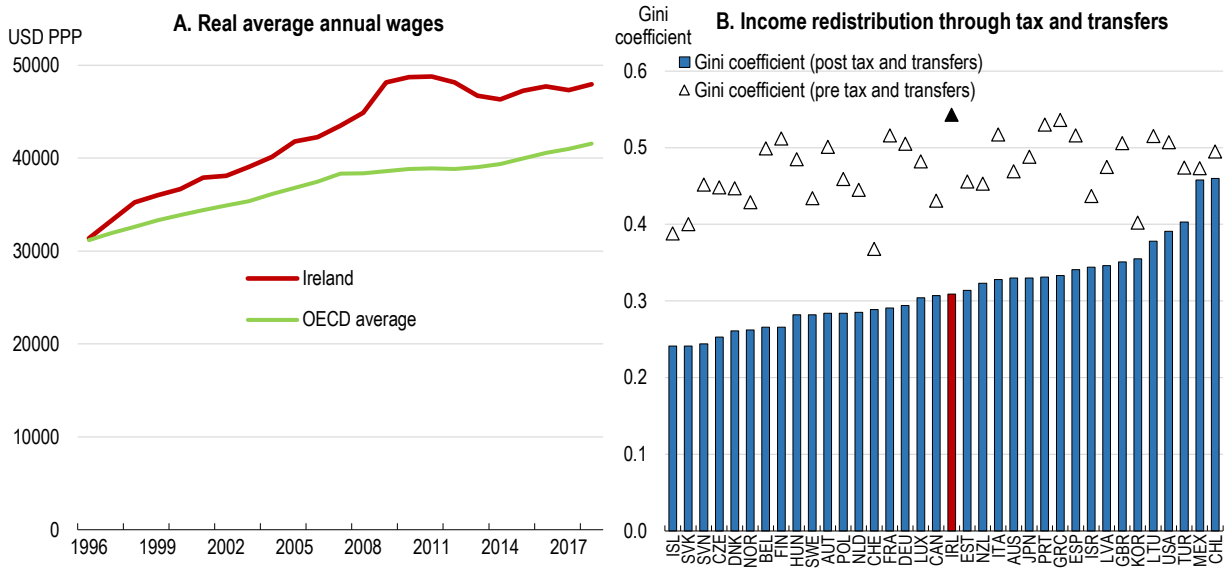
Competition policies also need to be recalibrated to reflect a more technologically-rich environment. Unique features of digitally-intensive markets, including substantial network effects, could negatively impact competitive dynamics. There has been less start-up activity in Ireland's digitally-intensive sectors than in other parts of the economy in recent years. Competition authorities should ensure that they have the capacity to closely monitor developments in emerging digital markets. They should also be given adequate enforcement powers to fight anti-competitive behaviour, including the capacity to impose sufficient penalties on competition law infringements to ensure a deterrent effect.

MAIN FINDINGS	KEY RECOMMENDATIONS
Raising fiscal sustainability	
With robust underlying economic activity and emerging capacity constraints, fiscal policy has been too loose in recent years. Windfall corporate tax receipts have been partly used to fund within-year cost overruns.	Fiscal policy should be tightened somewhat in the event of an orderly Brexit process. Use windfall corporate tax revenues to pay down general government debt or to further build up the Rainy Day Fund.
Ireland's upwardly distorted GDP, which relates to the activities of multinational enterprises, contributes to an overly benign assessment of the fiscal position when judged against the fiscal rules of the EU *Stability and Growth Pact*.	Create domestic fiscal rules based on measured modified gross national income (GNI*) and an estimate of potential output growth that is tailored to the Irish context. Continue to set, and report progress against, medium-term government debt targets as a share of GNI*.
Ireland relies less than other countries on more efficient tax sources, such as consumption taxes and recurrent taxes on immovable property. The local property tax is currently levied on 2013 market values.	Streamline the Value Added Tax system, moving from five rates to three. Reassess property values more regularly for the purposes of calculating the local property tax. At the same time, protect those low-income households adversely impacted.
The population is expected to age rapidly over the coming decades. Ireland is the only Western European country that does not have universal coverage for primary healthcare. A two-tier system exists whereby those with the ability to pay for treatment privately get faster access to care in public and private hospitals. A lack of capacity in both primary and secondary care contributes to long waiting times for treatment.	Implement the main proposals of the Sláintecare report, establishing a single-tiered health service that provides universal access to primary care.
The health sector has seen repeated expenditure overruns since 2015. Key legislative requirements are not being met related to the National Service Plan, which is the main tool for budget planning used by the Health Service Executive.	Ensure that all legislative requirements for the National Service Plan are fulfilled by the Health Service Executive.
Maintaining financial stability	
The non-performing loan ratio in the banking sector has declined notably. Nevertheless, it remains elevated relative to European peers. Furthermore, many of the remaining non-performing loans will be difficult to cure, partly due to slow repossession proceedings.	Consider granting lenders a collateral possession order for a future date.
Only around one-third of fintech firms are regulated by the Central Bank of Ireland. Other fintech firms have no reporting obligations.	Ensure regulators have the power to obtain relevant information from unregulated financial service providers.
Better protecting the natural environment	
Environment-related taxation remains low and Ireland will not achieve its carbon emission targets by 2020 or 2030. However, an increase in the carbon tax will be regressive.	Gradually raise the carbon tax rate according to a schedule that is well communicated to households and businesses. Use some of the revenues from an increase in the carbon tax rate to fund new green investment and measures that offset any adverse distributional effects.
The agriculture sector is the largest single contributor to Ireland's greenhouse gas emissions.	Pursue full and early implementation of cost effective measures for the abatement of carbon emissions from agriculture, particularly those related to afforestation.
Promoting inclusive technological diffusion	
Promoting greater business dynamism is key to encouraging the uptake of new technologies Regulatory burdens on start-ups are relatively onerous in Ireland, due to complex regulatory procedures and the system for licenses and permissions.	Monitor business licensing requirements and the systems that facilitate them, including by linking more licensing procedures with the Integrated License Application Service.
Participation in lifelong learning by adults is low.	Enhance financial assistance for training programmes for young workers. More actively establish and promote distance learning programmes. Couple adequate public financial support for childcare with measures to expand childcare capacity.
Gaps in the coverage of social protection and labour market regulations between dependent employees and self-employed workers can distort choices around the form of employment, erode the social protection base and undermine the bargaining position of platform workers.	Require those freelance platform workers who are effectively dependent employees to pay a Pay-Related Social Insurance premium equivalent to that paid by dependent employees and introduce an employer contribution.
Unique features of digital markets, including substantial network effects, may be negatively impacting competitive dynamics.	Give the Irish Competition and Consumer Protection Commission adequate enforcement powers to fight anti-competitive behaviour, including the capacity to impose sufficient penalties on competition law infringements to ensure a deterrent effect.

1 Key policy insights

Ireland's living standards remain high (Figure 1.1, Panel A). Growth has been strong, despite bouts of volatility. The average real wage was on par with the OECD average in the mid-1990s, but now stands more than 15% above. Furthermore, a highly redistributive tax and transfer system has contained income inequality in disposable incomes (Figure 1.1, Panel B).

Figure 1.1. Rising Irish incomes have been shared through the tax and transfer system



Note: In Panel B, data are for 2017 or the most recently available year.
Source: OECD Economic Outlook database; OECD Income Distribution database.

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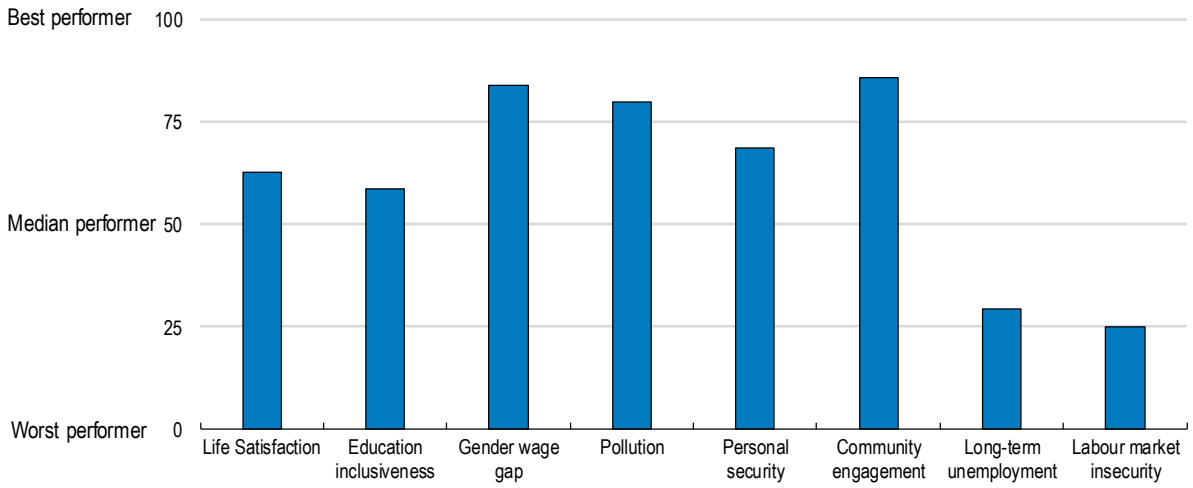
The population also benefits from a high level of wellbeing across other dimensions (Figure 1.2). Life satisfaction is high, according with the strong economy as well as other features such as low levels of pollution, strong community engagement and high perceived personal security. Performance in education depends less on socio-economic status than in most other OECD countries. The gender wage gap is also one of the lowest in the OECD, having declined markedly over recent decades. Ireland continues to be an attractive destination for foreign direct investment, with a stable political system, a relatively-young English-speaking population and a supportive regulatory and tax regime. Looking forward, the country is well positioned to take advantage of the opportunities presented by technological change, though there are various challenges that need to be carefully navigated.

Figure 1.2. Wellbeing is high across multiple dimensions

Dimensions of wellbeing, Index (50=OECD median performer)



Note: Education inclusiveness is based on the measure of variation in reading performance explained by a student's PISA index of economic, social and cultural status. Data for the gender wage gap are for 2017 or the latest available year for each country used.
Source: OECD Better Life Index database; OECD Gender Data Portal; OECD PISA 2018 database.

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The impressive economic growth of recent years has contributed to the economy beginning to run up against capacity constraints, with some skill shortages and strains on key infrastructure. The population is ageing, with the number of people aged over 65 outpacing that of the prime working age cohort since 2008. The structure of the economy is also undergoing sizeable change. Businesses located in Ireland have been keener to embrace new technologies than their counterparts in most other OECD countries, but the impact on productivity growth in most firms has been modest so far. These trends unfold against a backdrop of heightened global uncertainty and with scars of the financial crisis, notably high general government debt, fragilities in the banking sector and high long-term unemployment (Figure 1.2), still apparent.

The authorities have compiled a reform programme in response to these various challenges. Public investment decisions are to be aligned with a country-wide planning framework, *Ireland 2040*. In addition, *Future Jobs Ireland* set out a strategy to support businesses in embracing productivity-enhancing technological change and transitioning to a low-carbon economy, while promoting greater labour force participation and skill accumulation. With the United Kingdom's departure from the European Union in prospect, the authorities have also been putting in place a variety of supports for those Irish firms likely to be most affected.

In this context, the main messages of this *Economic Survey* are:

- Government finances have improved markedly, but ongoing fiscal prudence is needed given ageing-related fiscal costs will substantially rise and high uncertainty in the global outlook.
- Emerging capacity constraints can be mitigated by expanding supply. This can be enabled by raising labour force participation and reinvigorating productivity growth.
- Further technological adoption by businesses will boost productivity if complementary improvements in skills are achieved. Policy settings in other areas, including competition and the labour market, need to be revisited as new technologies spread.

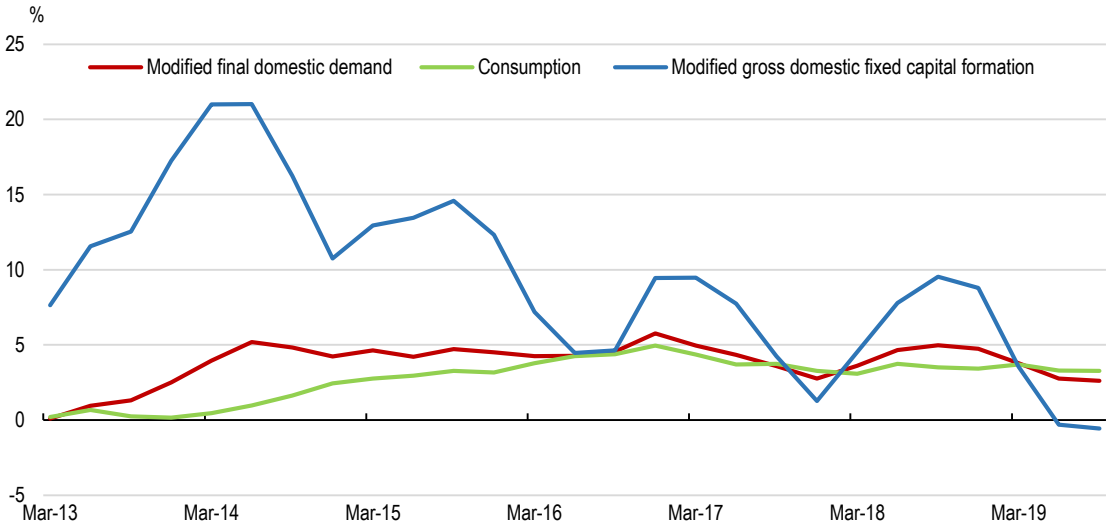
Recent macroeconomic developments and short-term prospects

Economic performance has remained impressive, despite various uncertainties. Irish national accounts have been heavily distorted by the activities of multinational corporations in recent years, leading the authorities to develop new analytical measures, such as modified gross national income (GNI*; see the *2018 OECD Economic Survey of Ireland* for a full description) and modified domestic demand.

Over the past year, modified domestic demand grew by around 3% (Figure 1.3). While investment activity has softened somewhat, private consumption growth has been solid. Exchequer tax receipts that are sensitive to the economic cycle, such as those related to income tax and value added tax, have been rising strongly.

Figure 1.3. The economy continues to expand vigorously

Annual percentage change



Note: The series are based on a trailing four-quarter average. Modified final domestic demand and modified gross domestic fixed capital formation are underlying measures of economic activity as they exclude the impact of volatile items that have little connection with the real economy such as trade in aircraft by aircraft leasing companies and trade in R&D and intellectual property.
Source: CSO, OECD calculations.

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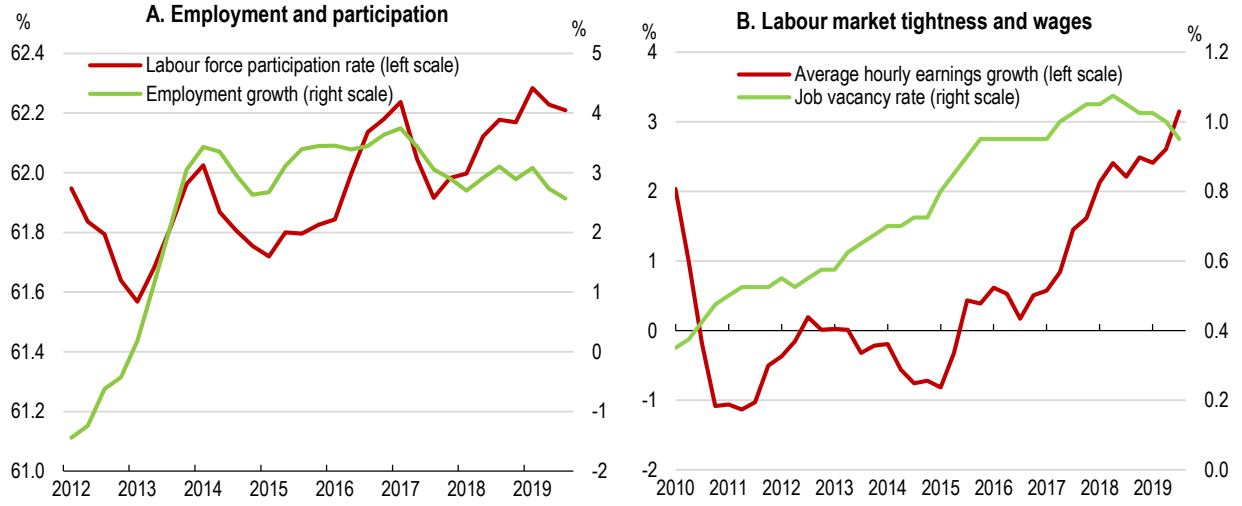
Buoyant consumption growth has reflected labour market strength. Total employment has risen by around 3% annually since 2013, driven fully by an increase in full-time employees. Brighter prospects have induced higher labour market participation (Figure 1.4, Panel A), especially for those of prime working age (25-54). Nevertheless, labour force participation remains four percentage points below the peak reached just before the financial crisis. Immigration plummeted between 2007 and 2010 but has resumed since, while fewer Irish emigrated. Net immigration has thus been positive and growing since 2015. Even so, the labour market has tightened with the continued decline in the unemployment rate. Indeed, the job vacancy rate has risen, putting upward pressure on wages. Average hourly wages have been growing by an annualised rate of 2½% in the past few years (Panel B), partly feeding into prices, particularly in services. Inflation would have been stronger over the past few years, if not for the appreciation of the euro against the British pound since the result of the Brexit referendum in 2016 (Economic Social and Research Institute, 2019).

Figure 1.4. Labour market conditions have strengthened



Note: In Panel A, employment growth is calculated as annualised percentage change from quarterly data and the labour force participation is the four quarter moving average. In Panel B, average hourly earnings growth is calculated as annualised percentage change from quarterly data and the job vacancy rate is the four-quarter moving average.
Source: CSO, OECD calculations.

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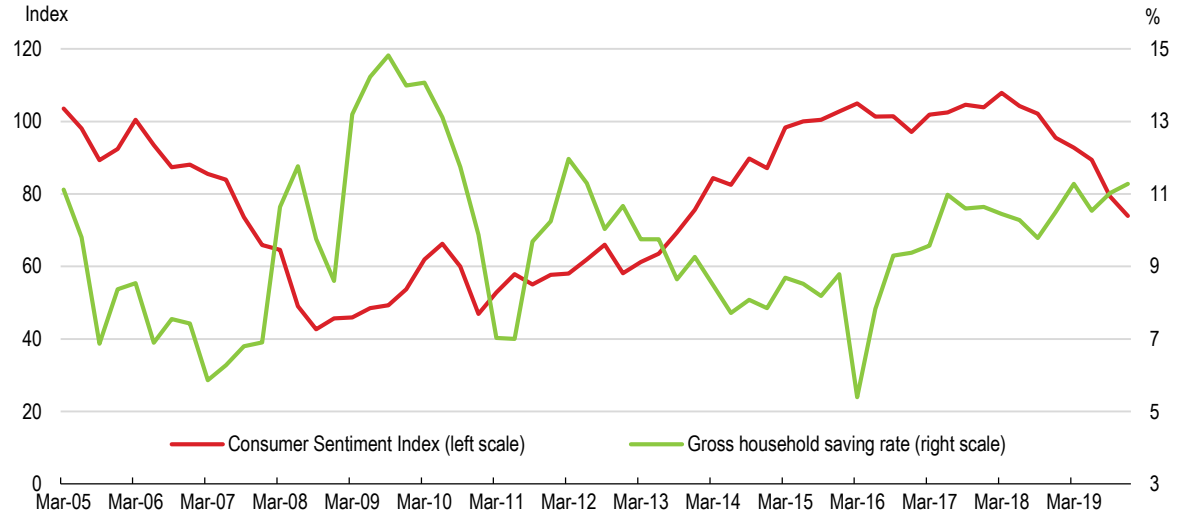
Consumer spending would be even stronger, were it not for high uncertainty. Consumer sentiment is at its lowest level since 2014 and households' saving rate has risen since the mid-2010s (Figure 1.5). Total credit extended to the sector has also fallen, though this mostly reflects a contraction in credit for house purchases amid tighter macroprudential lending standards.

Figure 1.5. Consumer sentiment has begun to ease amid uncertainty

Indicators of household saving and consumer sentiment



Note: The measure of consumer sentiment is calculated as quarterly averages of monthly readings.
Source: OECD Economic Outlook database, Economic Social and Research Institute (ESRI).

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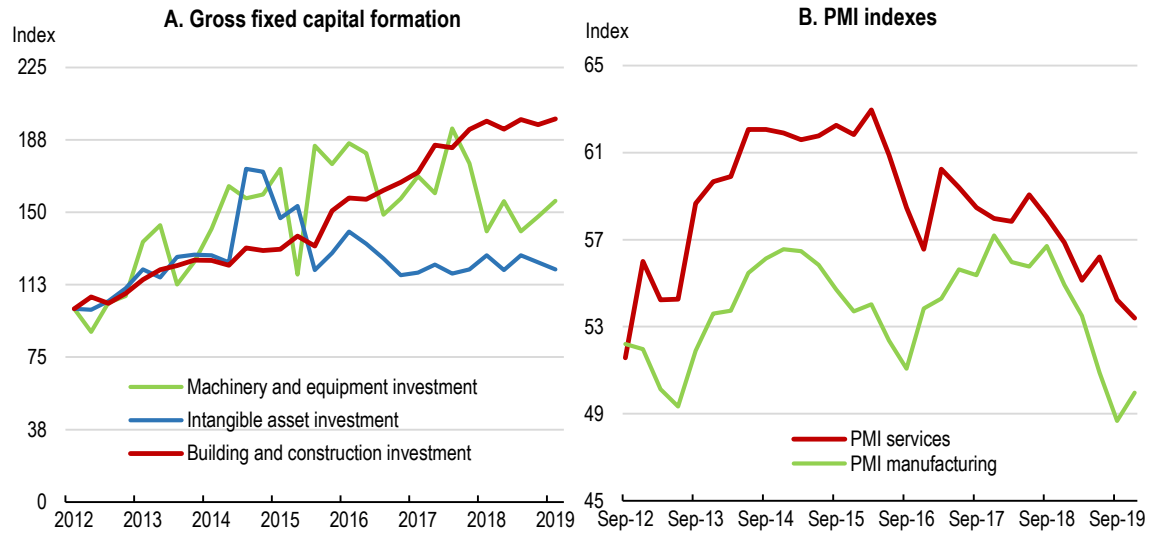
Investment activity continues to be driven by strong growth in housing construction (Figure 1.6, Panel A), a catch-up following the collapse in dwelling supply during the financial crisis (OECD, 2018a) and in the face of population growth. New dwelling completions rose by around 20% in the first three quarters of 2019 compared with a year earlier. Around 21,000 dwellings were likely completed in the full year, contributing to slowing house prices, especially in Dublin. Nevertheless, dwelling rents have continued to rise rapidly and projected demographic changes suggest further increases in the number of new homes is required: the central bank recently estimated that around 34,000 homes are needed each year to 2030 assuming continued high migration and no change in household formation rates (Conefrey and Staunton, 2019). The authorities established new institutions and revised planning guidelines in accordance with several of the recommendations in the *2018 OECD Economic Survey of Ireland* aimed at raising housing supply (Table 1.1; also see Chapter 2).This should continue to be a focus for policymakers.

Table 1.1. Past recommendations on increasing housing supply

Recommendations in previous *Survey*	Actions taken since March 2018
Encourage local councils to rezone underutilised sites as residential.	An independent Office of the Planning Regulator has been established to ensure that the zoning and planning decisions of local authorities are aligned with the National Planning Framework and that planning systems are functioning in a coherent way.
Relax building regulations in urban centres relating to minimum dwelling sizes and bans on north-facing apartments.	In March 2018, the Department of Housing published new guidelines for planning authorities on new apartments titled; "Sustainable Urban Housing: Design Standards for New Apartments". The new guidelines allow for the construction of north-facing apartments where necessary.
Protect debtors against slipping into poverty by continuing to raise the social housing stock.	In Budget 2020, the housing budget was increased by almost €300 million to €2.6 billion. The increase included an additional €20 million for homeless services.

Figure 1.6. Construction activity has been supporting investment



Note: Panel A presents data on gross domestic fixed capital formation. The machinery and equipment component excludes investment in aircraft related to leasing and the intangible assets component excludes R&D service imports and trade in intellectual property. The excluded components tend to be distorted by the activities of multinationals. In Panel B, data are on a three-month moving average basis.
Source: CSO, Markit Economics.

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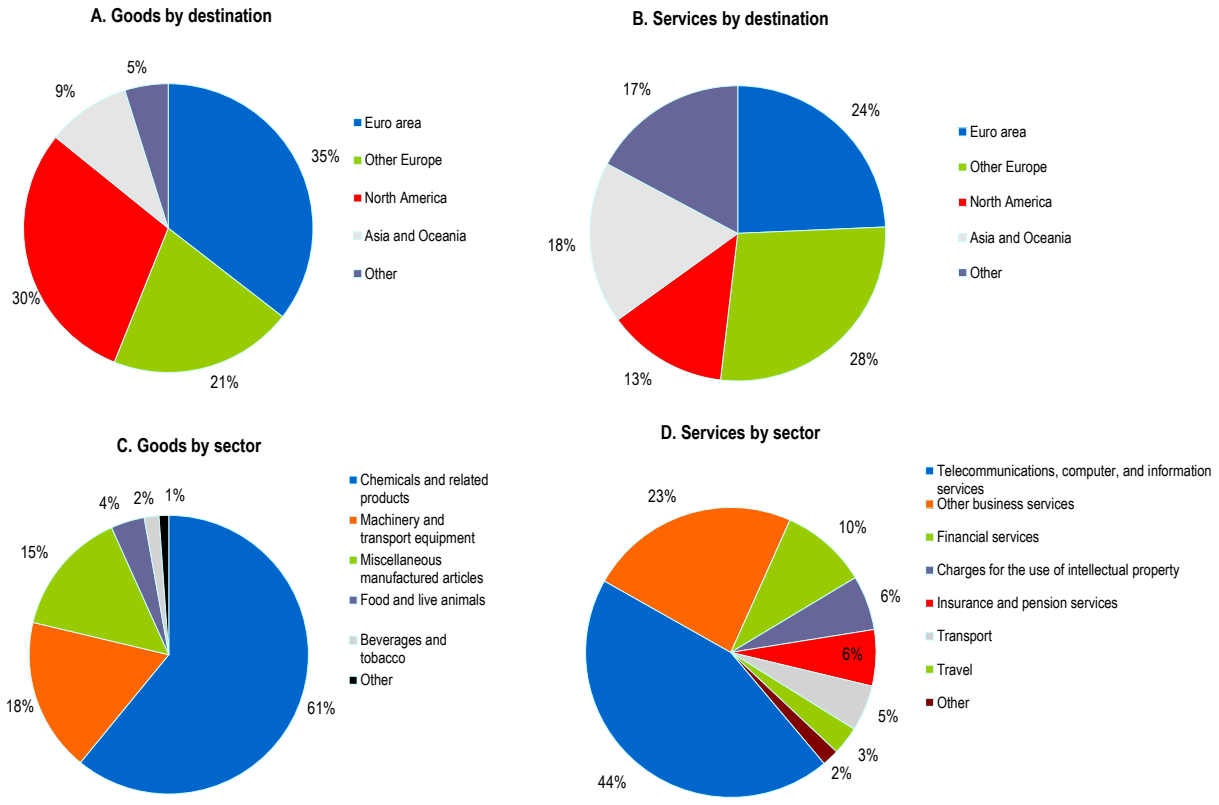
Other building and construction spending has also been robust, partly reflecting public projects under the *Ireland 2040* plan. In contrast, investment in non-aircraft machinery and equipment and intangible assets has stagnated since 2015 amid heightened global economic and political uncertainty. This accords with a continued decline in bank lending to small and medium enterprises. In recent months, purchasing managers indexes have weakened, especially for the manufacturing sector (Figure 1.6, Panel B), portending softer private business investment.

Fiscal policy has been expansionary over the past year, with strong public capital spending and steadily growing government consumption. The estimated underlying primary budget balance fell by around ½ per cent of GDP in 2019, suggesting that the increase in the headline budget balance was entirely attributable to stronger cyclical conditions and interest rate developments.

Ongoing export momentum has also supported the domestic economy. Services exports have soared over recent years, mostly driven by computer services. The services sector now accounts for around half of all Irish exports. Merchandise exports have expanded more moderately, partly due to the slowdown in the European economies that are the major markets for such goods (Figure 1.7, Panel A).

Figure 1.7. The majority of Irish exports are bound for Europe

Share of exports by sector and destination



Note: Data presented in Panels A, B and D are for 2017. Data presented in Panel C are an average over 2016-18.
Source: OECD International Trade Statistics.

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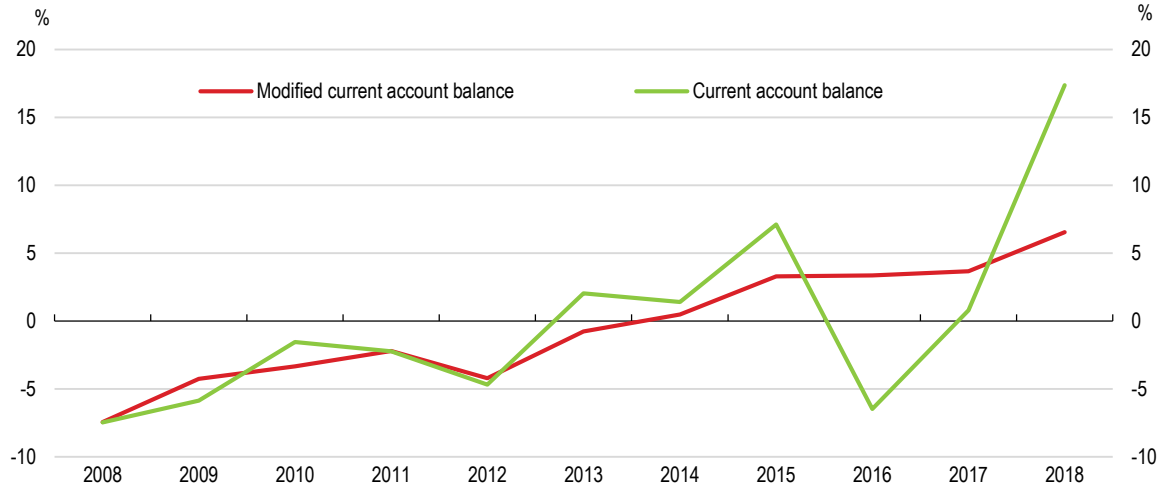
Despite robust aggregate export growth, the United Kingdom's planned departure from the European Union ("Brexit") and slowdown have started to affect Irish trade in some sectors. The United Kingdom accounts for 14% of all Irish exports. Exports of machinery and equipment, chemicals and tourism to Ireland's large neighbour have either stagnated or fallen since the UK referendum on EU membership in 2016. The *2018 OECD Economic Survey of Ireland* presented estimates derived from the OECD METRO model that suggested Irish exports in some sectors such as agriculture and food could fall by around 20% in the event of a trade arrangement between the UK and EU governed by the World Trade Organisation's Most-Favoured Nation Rules. So far, however, there is not clear evidence of significantly weaker exports in these sectors resulting from Brexit uncertainty (Central Bank of Ireland, 2019a).

Overall, the Irish economy has gained competitiveness and external imbalances have declined in recent years. The growth in Irish exports has outpaced the expansion in Irish export markets, signalling gains in export market share. Ireland's current account is volatile and heavily influenced by the activities of multinationals. However, in underlying terms, it has moved from a deficit of 7½ per cent of GNI* in 2008 to a surplus of 6½ per cent in 2018 (Figure 1.8). Although the current account surplus has been inflated by recent unexpectedly high corporate tax revenues, it would have still recorded a surplus of around 4% of GNI* in 2018 if windfall corporate tax receipts from 2015 to 2018 were excluded (Department of Finance, 2019a).

Figure 1.8. The current account has moved into surplus

Current account balance, percentage of GNI*



Note: The modified current account balance adjusts for three main distortions affecting the interpretation of the headline current account: intellectual property imports, imports of aircraft related to leasing and profits of companies that establish a legal presence in Ireland while investing little in the country.
Source: CSO, OECD calculations.

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Looking ahead, on the assumption of an orderly Brexit (i.e. the transition period is assumed to end smoothly), economic growth is set to moderate but remain slightly above estimated potential output growth (Table 1.2). Lingering Brexit-related uncertainty will constrain business investment and private consumption. Housing–related construction and public capital projects will continue to support the economy, although mounting capacity constraints may hinder growth in these areas. The unemployment rate will continue to fall to historically very low levels with wage pressures building. As higher wages further feed into prices, competitiveness will deteriorate absent a resurgence in productivity growth. A slowdown in demand in Ireland's major trading partners will also contribute to lower export growth.

In the event of an orderly Brexit, fiscal policy is expected to exert a broadly neutral influence on economic conditions. Given that the economy is expected to grow slightly above estimated potential output growth and that euro area monetary policy settings are exerting a stimulatory effect, fiscal policy should be tightened to have a slightly contractionary influence. That said, the high level of uncertainty at present means that the authorities should prepare to make further counter-cyclical adjustments to fiscal policy settings if either upside or downside shocks eventuate.

The risks to the economic outlook are tilted to the downside. The exact impact of Brexit on the economies of the United Kingdom and European Union is highly uncertain and depends on the nature of any trade arrangement eventually agreed, but a sharp slowing in demand from these areas will notably weaken the Irish economy given its high dependence on trade. The re-imposition of customs and border controls and additional administrative burdens along the UK "Land Bridge" has the potential to significantly increase costs for traders (Box 1.1). The Irish Maritime Development Office estimate that over €21 billion of trade was carried out via the UK Land Bridge in 2016. Furthermore, beyond the central forecast scenario and its associated risks, a disorderly resolution to the Brexit transition process, a ratcheting up of trade policy tensions directly involving European economies and an oil supply shock would considerably alter the outlook (Table 1.3).

Box 1.1. Irish trade and the United Kingdom "Land Bridge"

The United Kingdom "Land Bridge" is a term used to describe a route that connects importers and exporters in Ireland to international markets via the United Kingdom road and ports network. It is a strategically important means of access to Ireland's main export markets in the European Union as it delivers transit times at least twice as fast as alternative routes. As a result, the Land Bridge has typically been favoured by traders in perishable goods, those that rely on speed of delivery as a competitive advantage and those that trade in high value added goods where shorter transit times reduce working capital requirements.

A recent study by the Irish Maritime and Development Office produced an estimate of the volume of Irish trade that uses the Land bridge to access the European Union. In 2016, it was estimated that around 40% of Irish exports in both volume or value terms travelled via the Land Bridge. In addition, around 13% of Irish import volumes and values used the route.

Source: Breen, et al. (2018).

If negative risks eventuated, some of the Irish economy's vulnerabilities could compound the pain. Legacies of the financial crisis could also amplify a negative economic shock. The debt burden of the household sector remains high by cross-country standards, though it has declined notably over the past decade (Figure 1.9). Public sector debt is also still high and fragilities in the financial sector remain a source of concern for policymakers (both discussed further below). A great asset to the Irish economy, but also a vulnerability, is the high share of foreign-owned firms in the business sector. They currently account for around one in five jobs in Ireland (both direct and indirect effects) and the bulk of corporate tax revenues. The *2018 OECD Economic Survey of Ireland* documented a large positive productivity gap between foreign-owned and locally-owned firms in the Irish economy. Furthermore, foreign-owned firms primarily source inputs from abroad (OECD, 2020a), with such firms in key sectors like chemicals and computer, electronic and optical products sourcing less than 10% of their materials within Ireland. Foreign-owned firms are internationally mobile and a fading of their desire to locate in Ireland could weigh heavily on the economy. Rising international tax competition as well as new international tax agreements as part of the OECD Base Erosion and Profit Shifting (BEPS) process (discussed further below) could influence the future location decisions of foreign-owned firms.

While corporate debt is high by international standards, it is inflated by the debt of large multinational enterprises to foreign counterparties that are often within the same corporate group. Abstracting from these

liabilities, Irish corporate debt is roughly in line with that in other European countries (Department of Finance, 2019b).

Table 1.2. Macroeconomic indicators and projections

Ireland	2016 Current prices EUR billion	2017	2018	2019	2020	2021
		Percentage changes, volume (2017 prices)				
GDP at market prices	271.4	8.2	8.3	6.2	3.6	3.3
Private consumption	91.8	3.3	3.4	3.4	3.1	2.6
Government consumption	33.5	3.5	4.4	4.1	4.2	4.1
Gross fixed capital formation	96.4	-7.6	-20.0	41.8	-18.3	4.4
Final domestic demand	221.6	-0.4	-4.8	20.3	-4.4	3.5
Stockbuilding	7.1	1.5	-2.6	0.6	-2.3	0.0
Total domestic demand	228.7	9.5	-6.1	19.3	-7.7	4.3
Exports of goods and services	328.0	9.1	10.5	11.3	5.4	3.5
Imports of goods and services	285.3	0.8	-2.7	23.0	-0.3	4.5
Net exports	42.7	10.2	15.3	-6.6	7.3	0.2
Memorandum items						
GVA, excluding sectors dominated by foreign-owned multinational enterprises	_	4.8	3.9	4.8	3.5	3.4
GDP deflator	_	1.1	0.8	1.1	1.3	1.6
Harmonised index of consumer prices	_	0.3	0.7	0.9	1.1	1.8
Harmonised index of core inflation	_	0.2	0.3	0.9	1.3	1.8
Unemployment rate (% of labour force)	_	6.7	5.7	5.0	4.8	4.7
Output gap (% of potential GDP)	_	-2.7	1.7	3.8	3.9	3.9
Household saving ratio, net (% of disposable income)	_	6.0	5.8	5.9	6.2	6.3
General government financial balance (% of GDP)	_	-0.3	0.0	0.4	0.7	1.0
Underlying government primary balance (% of potential GDP)	_	2.6	1.1	0.6	0.6	0.6
General government gross debt (% of GDP)	_	77.4	76.0	71.0	66.2	64.9
General government debt, Maastricht definition (% of GDP)	_	67.8	63.6	58.6	53.8	52.5

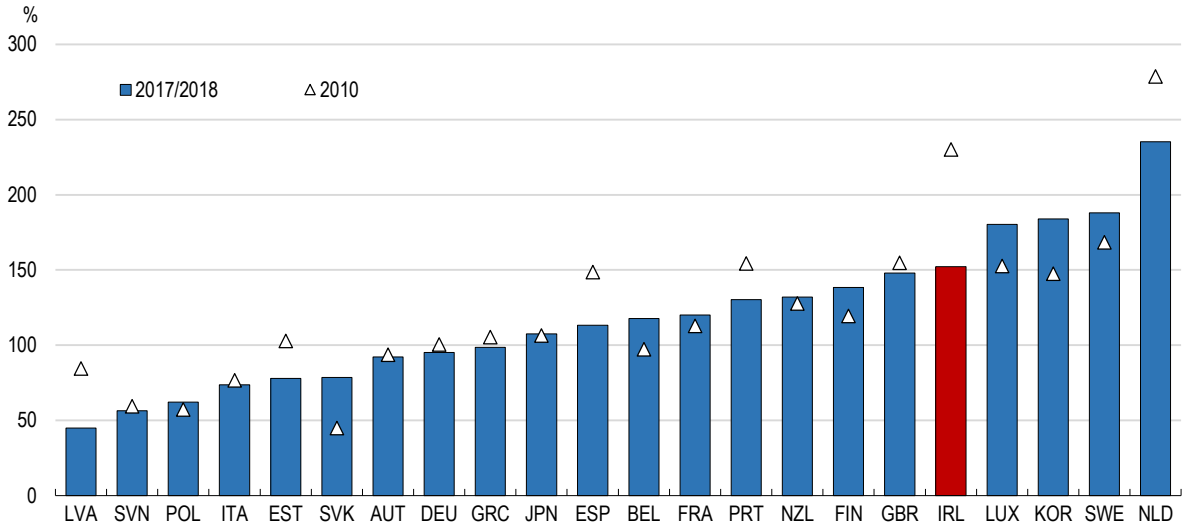
Note: Projections are based on the assumption of an orderly Brexit process, whereby the transition period ends smoothly. The values for stockbuilding are contributions to changes in real GDP (in level in the first column). The forecast assumption for exports is that contract manufacturing activity (exports of goods produced abroad under contract from an Irish-based entity) by multinational enterprises is assumed to remain at the 2019 level in 2020 and 2021. GVA stands for gross value added.

Table 1.3. Low probability events that could lead to major changes in the outlook

Shock	Possible impact
Disorderly Brexit process	It is possible that the Brexit transition process could conclude without an agreement on the future relationship between the United Kingdom and European Union. A significant increase in barriers governing relations with the UK and a major slowdown in that economy could have large negative economic effects on Ireland.
Ratcheting up of trade policy restrictions	As a small open economy that is a hub for commercial transactions between the United States and Europe, Ireland is particularly exposed to any ratcheting up of trade policy tensions.
Oil supply shock	Any interruption to global oil supply that causes an increase in oil prices will negatively impact consumer demand and competitiveness. While the energy intensity of Irish production is low, the country has no domestic oil production and depends heavily on oil for transport and heating.
A repricing of global risk premia	A sudden drop in global risk appetite could lead to a rise in interest rates and declining asset values. Irish financial firms have direct exposure to global financial markets, including the global leveraged loan market, and the indebtedness of the household and public sectors remains high.

Figure 1.9. Household debt remains high

Household debt as a share of net disposable income



Note: The blue bars present the latest available data point, which corresponds to either 2017 or 2018.
Source: OECD Resilience database.

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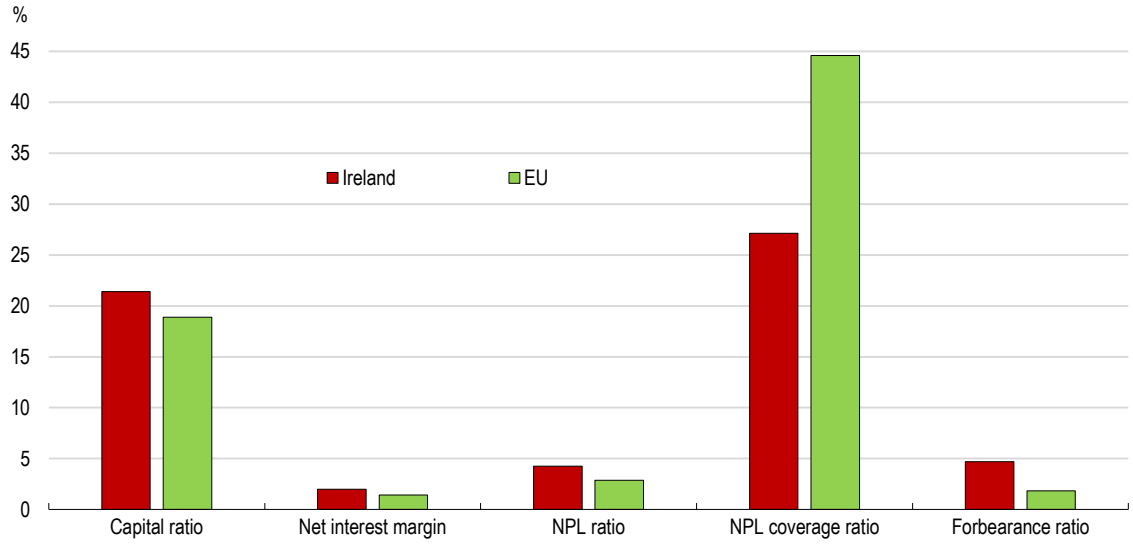
Safeguarding financial stability

The Irish banking sector has deleveraged markedly since the financial crisis, with balance sheets having contracted by around 60% since 2009. More stable sources of funding now make up a larger share of liabilities and banks have become more resilient to shocks. The leverage ratio (the ratio of core capital to total assets) was close to double the average EU value in early 2019, with the retail banking sector having twice as much Tier 1 capital relative to risk weighted assets as in 2010. Interest margins are relatively comfortable (Figure 1.10), mainly due to lower funding costs and interest rates on mortgage loans and SME loans that are higher than in other countries (European Commission, 2019a).

The results of 2018 EU-wide stress tests suggest that Irish banks could weather a significant downturn. The tested banks had enough capital to remain solvent in the event of Europe-wide recession, while maintaining lending to the rest of the economy in line with debt repayments from borrowers. The Central Bank of Ireland has actively deployed macroprudential policy measures to buttress the stability of the financial system. Since 2015, macroprudential mortgage rules such as loan-to-value and loan-to-income limits have been applied. A countercyclical capital buffer is currently set at 1% and additional capital buffers are applied to six supervised institutions identified as systemically important.

The Central Bank recently opted to maintain the regulated loan-to-income and loan-to-valuation limits for 2020. The measures have become increasingly binding as housing prices outpaced incomes (Kelly and Mazza, 2019). With a housing market that continues to suffer from supply constraints, this signals that the measures are working as intended: encouraging mortgage lending that reflects borrower's debt servicing capacity and leaning against the conditions for another credit-fuelled boom-bust housing cycle to take root. A recent counterfactual analysis estimated that dwelling prices would have been 26% higher in early 2019 if the macroprudential mortgage measures had not been introduced (Central Bank of Ireland, 2019b).

Figure 1.10. Irish banks are well capitalised but the share of non-performing loans remains high



Source: European Banking Authority.

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The macroprudential toolkit should continue to be evaluated against emerging risks. The current set of policy measures assume an orderly Brexit scenario. They are also focused primarily on the banking sector, despite the share of non-bank financial institutions having risen dramatically over recent years (IMF, 2019). The development of a systemic risk buffer should be considered, following the agreement of the Minister of Finance to transpose the measure into Irish law and give responsibility to the central bank for its implementation and calibration. If adopted, this tool would allow the central bank to impose additional capital requirements on banks to safeguard the financial system against an idiosyncratic shock. Having the systemic risk buffer in the macroprudential toolkit could be especially important for a very open economy like Ireland that has been prone to volatility in the past.

Irish retail bank profitability has recovered since the crisis. However, a number of the systemically important Irish-headquartered banks are still trading below book value, indicating that market participants are pessimistic about future profitability and asset quality. Costs in Irish banks are inflated relative to other European banks (Central Bank of Ireland, 2019b) and have been rising: the aggregate cost-to-income ratio picked up from 56% in mid-2016 to around 63% in 2019. Downward pressure on net interest margins due to the low interest rate environment and the lingering high stock of non-performing loans (NPLs) on bank balance sheets have also been weakening bank profits.

The NPL ratio fell from around 15% in mid-2016 to 5% in 2019, aided by portfolio sales and improved economic conditions. Moreover, the stock of NPLs more than one year past due halved in the year to June 2019. Nevertheless, the aggregate NPL ratio in Ireland remains elevated compared to European peers (Figure 1.10) and many of the remaining NPLs on bank balance sheets may be difficult to cure (Central Bank of Ireland, 2019c). This partly reflects weak collateral enforceability due to slow repossession proceedings relative to other countries (O'Malley, 2018; National Competitiveness Council, 2019). Repossession is especially slow for primary dwellings (OECD, 2018a) and mortgages tied to such dwellings remain the main source of the remaining NPL stock.

Slow repossession proceedings provide a disincentive for both the borrower and lender to engage in the repossession process. Reflecting this, the proportion of loans granted forbearance in Ireland was over double the European Union average in 2019 (Figure 1.10). Furthermore, over half of the remaining principal dwelling arrears balances are long-term in nature (over 720 days past due). Relatively weak mortgage enforceability in Ireland means that increased provisioning for non-performing housing loans

may be needed, especially as such provisions are relatively low in Ireland. Although NPL sales have mostly been at values within provisioning levels, increased provisioning requirements would encourage banks to reduce their stock of NPLs more rapidly and allow them to do so without threatening their solvency. In any case, higher NPL provisions are likely to be required over the coming year as part of the European Central Bank's Supervisory Expectations for Prudent Provisioning (Central Bank of Ireland, 2019b). European Union regulations have also been amended to introduce minimum coverage (i.e. a "prudential backstop") for losses caused by future loans that turn non-performing (European Union, 2019).

To further promote non-performing loan resolution, the authorities should also identify measures to speed up repossession proceedings. As discussed in the *2018 OECD Ireland Economic Survey*, slow repossession procedures partly reflects high frequency of adjournments of mortgage arrears cases before the courts (OECD, 2018a). The authorities should consider standardising the 'suspended' possession order, like in the United Kingdom (CCPC, 2012). This would better encourage engagement between the borrower and lender by granting lenders a collateral possession order for a future date with the suspension of possession conditional on well-defined criteria. Trade-offs exist, as such a policy may have the unintended consequence of encouraging collateral to be run down by debtors. The impact of any such policy change on debtor wellbeing should also be evaluated, with the reform carefully designed to ensure that the benefits with regard to reducing uncertainty and encouraging the provision of finance outweigh any unintended costs.

Table 1.4. Past recommendations on improving financial stability

Recommendations in previous *Survey*	Actions taken since March 2018
Introduce regulatory measures to incentivise banks to further reduce non-performing loans.	The Central Bank of Ireland takes part in the Single Supervisory Mechanism at the European Union level. In March 2018, the European Central Bank published the final version of its "Addendum to the ECB Guidance to banks on non-performing loans: supervisory expectations for prudential provisioning of non-performing exposures".
Grant creditors a possession order for a future date.	No specific action taken.

New financial sector entrants

The reduction in the size of bank balance sheets has coincided with strong growth in the non-bank financial sector. Investment funds, the largest part of Ireland's non-bank financial sector, have increased their balance sheet more than six-fold since the end of 2008. In mid-2019, such funds had assets under management of €2.6 trillion (around 8 times annual GDP).

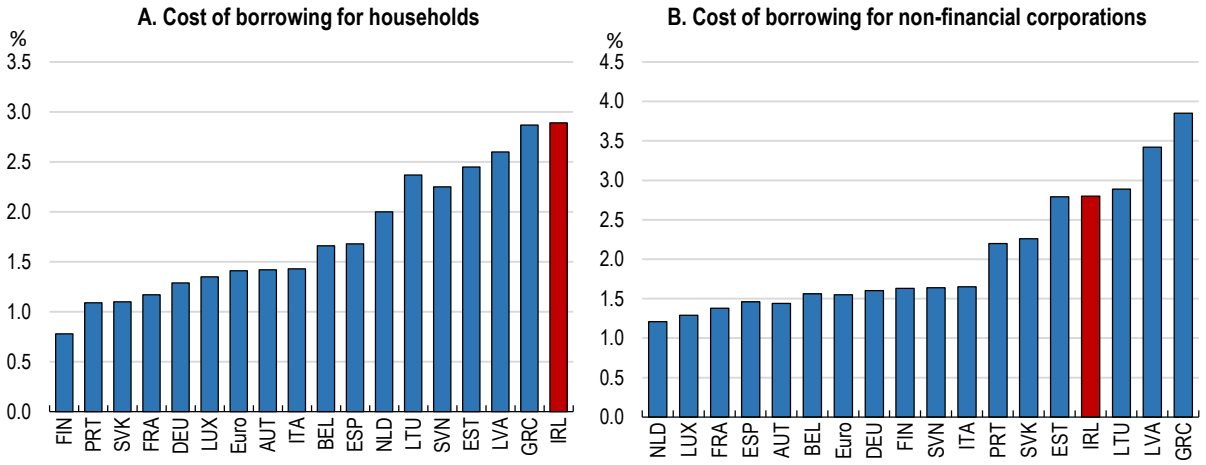
Most of the exposure to non-bank financing entities lies with non-residents. The assets and liabilities of such entities are reasonably well diversified geographically, though around 30% of their assets and funding are directly related to the United States (IMF, 2019). In recent years, the links between non-banks and the Irish economy have been growing. Irish resident investment funds now hold around one-third of the stock of investable commercial real estate (Central Bank of Ireland, 2019b). Furthermore, domestic banks now invest about 12% of their assets into investment funds and other non-bank financial intermediaries and around 10% of bank funding derives from these sources (IMF, 2019). These tighter links increase the risk that a shock to the non-bank financial sector would affect real economy.

Some segments of the non-bank market are highly leveraged. In particular, real estate investment funds notably increased their leverage over the past five years. This was partly due to the introduction of a 20% tax rate on foreign investors holding shares of funds investing in Irish property, which induced shareholder loans to be increasingly used in place of equity (Central Bank of Ireland, 2019b). As part of Budget 2020, the government introduced limitations on deductions for interest expenses in an attempt to disincentivise high levels of leverage by real estate investment funds. Nonetheless, even after abstracting from the increase in shareholder loans due to the earlier change in taxing arrangements, such funds remain highly

leveraged relative to European peers (Central Bank of Ireland, 2019b). A risk is that an increase in market interest rates (for instance, through a sudden drop in global risk appetite) could result in forced sales of real estate assets.

Given the wide variety of entities and activities in the non-bank sector, the authorities must continue to invest resources in monitoring developments and enhancing their capability to conduct robust stress tests of the sector. In doing so, care should be taken not to introduce excessive regulatory burdens that would hold back the development of innovative financial solutions providing alternatives to bank financing. Bank interest rates are relatively high in Ireland (Figure 1.11), partly due to a lack of competition in the financial sector following the financial crisis, so new sources of finance should be encouraged.

Figure 1.11. Market interest rates are high in Ireland



Note: Indicators are measured as at August 2019.
Source: European Central Bank.

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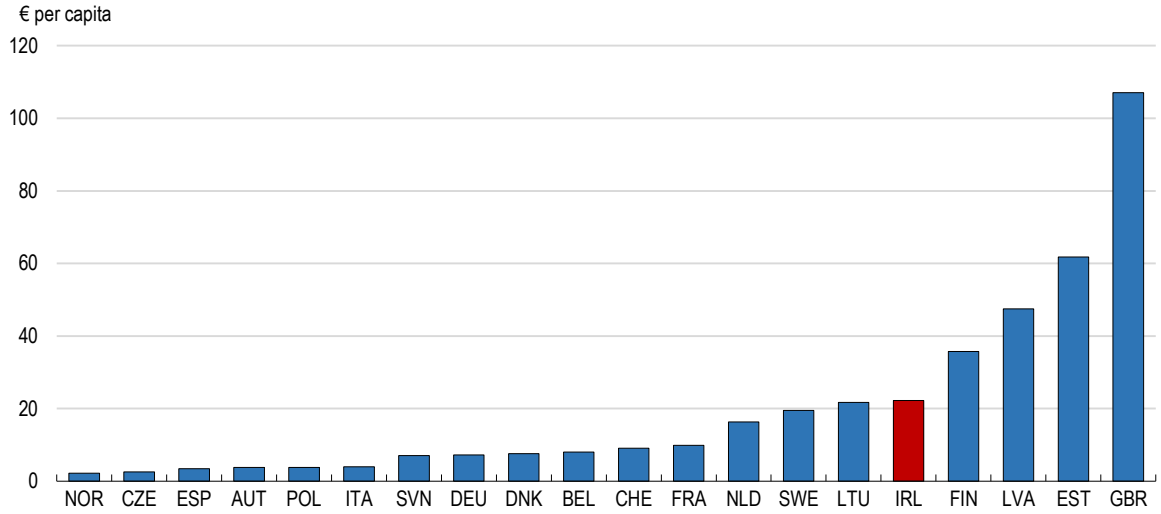
Technology has enabled the entry of new business models of credit intermediation that operate online ("fintech"), such as lending-based crowdfunding and balance sheet lenders (leveraged non-bank institutions that transform risk and maturity). Online alternative financing is quite developed in Ireland relative to most other EU countries (Figure 1.12). Such sources of finance can both introduce competition to the traditional banking sector and provide access to finance for entities that have trouble obtaining credit from traditional banks. For instance, some young entrepreneurial firms that have few physical assets and a limited track record may turn to online alternative financing platforms. The emergence of fintech can reduce the systemic importance of some existing entities. Furthermore, platform intermediation may be less prone to self-fulfilling bank runs than traditional banks as borrowers and lenders are connected directly, meaning that a lender's return does not depend on the actions of other lenders (Havrylchyk, 2018). At the same time, growth in decentralised financial technologies may bring risks to financial stability. For instance, peer-to-peer lending patterns are often prone to pro-cyclicality and pose legal and administrative challenges for recovery resolution (Financial Stability Board, 2019).

Recently, Big Tech companies with a large user base have entered the EU payments market (e.g. Apple Pay, Google Pay and peer-to-peer payments and donations via Facebook Messenger). Some of these have done so by obtaining licenses in Ireland. The scale of the network that Big Tech companies possess makes their potential for disruption to the existing market especially large. Their entry can make cross-border payments less expensive and time-consuming for consumers. Some entrants are adopting a "freemium" business model, by which payment services have no financial cost for users but their data is collected and can be used for advertising and other functions. This information could be used by Big Tech

companies to create credit-scoring models that are sold to banks and other loan originators. Past work has highlighted that information from users' online activity can substantially improve the prediction of default when combined with credit bureau scores (Berg et al., 2018). In principle, better prediction of default would enhance financial stability.

Figure 1.12. Fintech financing is comparatively common

Online alternative finance, 2017



Source: Cambridge Centre for Alternative Finance.

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The size of Big Tech firms and their large existing customer network may have adverse consequences for competition in the market. Online payments may be characterised by winner-takes-all dynamics, as the value to customers of a platform is likely to increase with the number of active users. Many Big Tech firms also have considerable gatekeeper power due to their ability to bar other companies from accessing their technological infrastructure (Khan, 2018). While increased market concentration is not necessarily undesirable, policymakers must ensure that incumbents do not defend dominant positions through anticompetitive conduct. This includes through Big Tech companies acquiring smaller innovative firms that could grow into potential competitors.

Only around one-third of fintech firms are regulated by the Central Bank of Ireland or another European country (Enterprise Ireland, 2018) and unregulated entities have no reporting obligations to the regulator. While some of these unregulated firms do not provide financial services, many undertake activities that can have implications for consumer protection, market conduct, payment activities and financial stability. Designing a robust regulatory framework requires intimate knowledge by regulators about emerging business models and risk management practices. An "Innovation Hub" has been launched by the central bank to increase engagement between regulators and fintech firms and has received around six enquiries each month (Central Bank of Ireland, 2018). This should be complemented by ensuring that regulators have the power to obtain relevant information from those unregulated entities in the fintech or Big Tech domains that undertake activities that have implications for the functioning of the financial sector and consumer protection. At the same time, care should be taken to ensure that reporting obligations do not impose an inordinate administrative burden on these firms.

The central bank and competition authorities should also continue to closely monitor the level of market concentration in the non-bank financial sector, especially with the emergence of payment services through Big Tech companies. If such entities launch a new payment service via a subsidiary, the Irish regulators

treat the new firm the same way that they would any other start-up. However, given the potential market power afforded to such payment services from the existing network of the parent company, greater scrutiny of the competitive consequences on the market of the firm's entry is required.

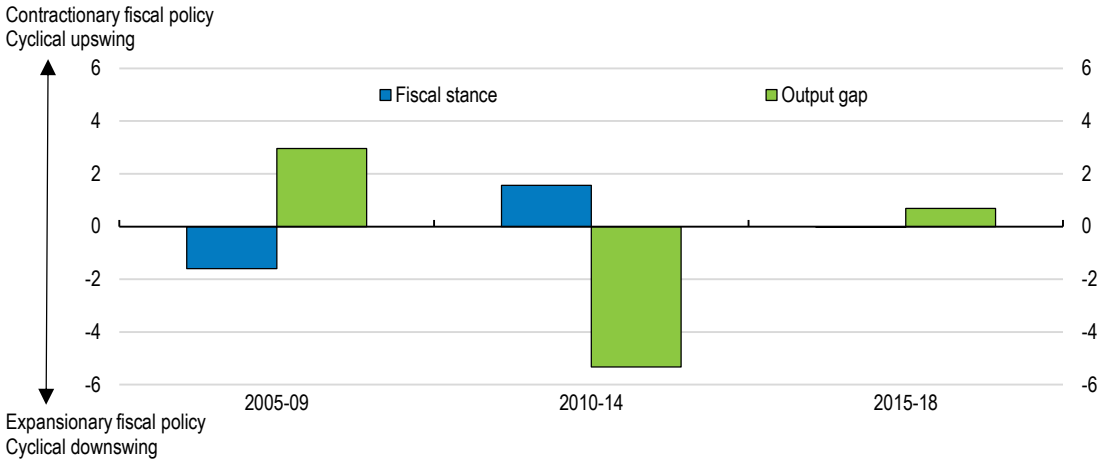
Ensuring fiscal sustainability

Recent fiscal developments

Ireland's fiscal position continues to improve. For the first time in a decade, the budget balance returned to surplus in 2018. However, in the past few years the improvement has not reflected a structural tightening of fiscal policy. Instead, unexpected corporate tax receipts and interest savings have enabled the government accounts to balance. Against a backdrop of emerging capacity constraints, fiscal policy has been too loose, even if it has been less pro-cyclical than in 2005-09 or 2010-14 (Figure 1.13). The authorities should be vigilant to ensure that the historical pattern of fiscal policies that have amplified, rather than smoothed, the economic cycle is not repeated.

Figure 1.13. Fiscal policy has recently been less pro-cyclical but should have been tighter

Measured fiscal stance and output gap



Note: The figure presents the simple average of the fiscal stance (defined as the change in the underlying primary budget balance as a percentage of GDP) and the output gap over successive time periods. An increase in the fiscal stance denotes a contractionary fiscal stance. A positive output gap means actual GDP exceeds estimated potential output.
Source: OECD Economic Outlook database, OECD calculations.

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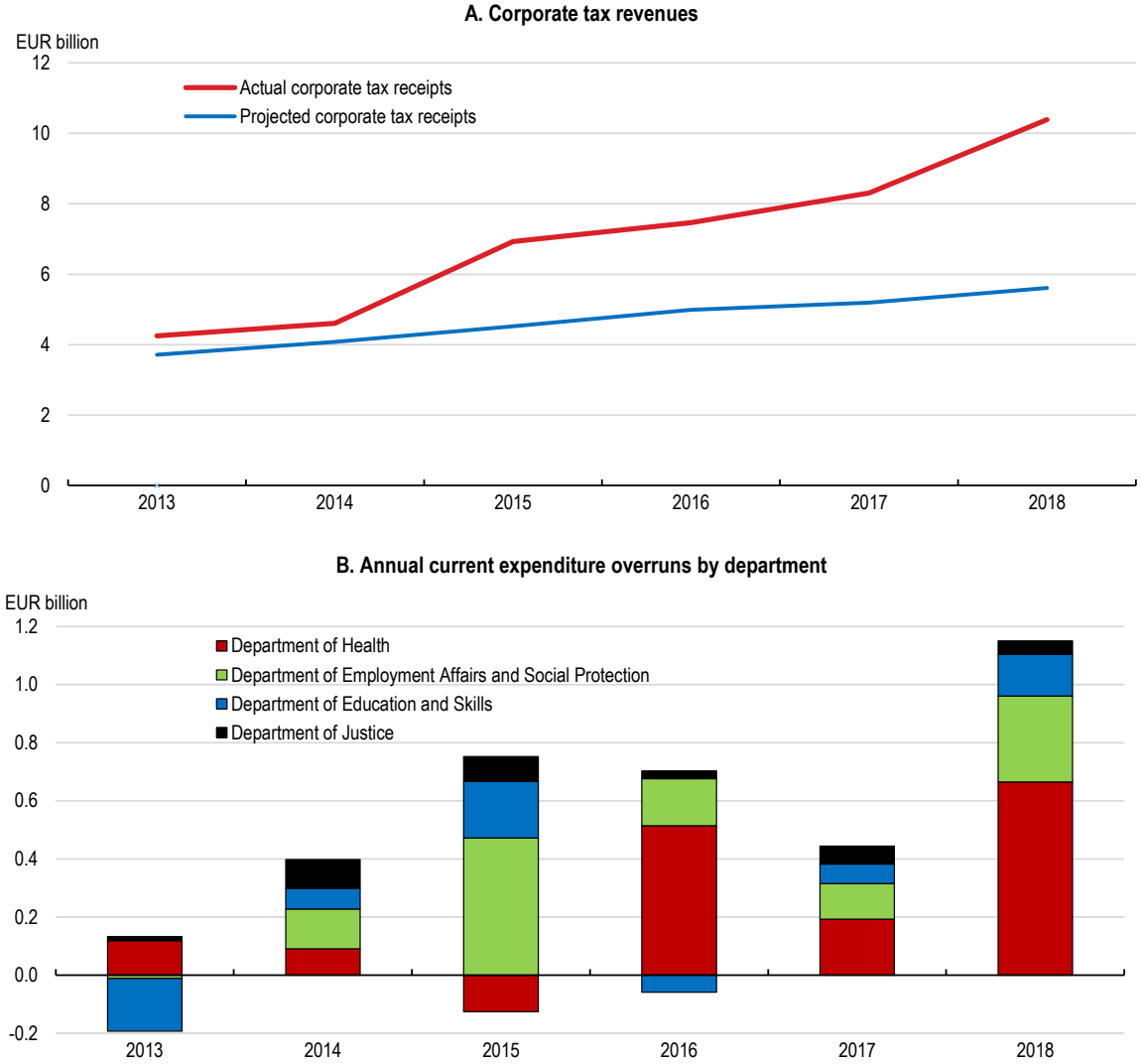
The recent rise in corporate tax receipts is likely to be unwound over the medium term and the authorities should plan accordingly. The Irish Fiscal Advisory Council has estimated that corporate tax receipts in 2018 were 30-60% (equivalent to 1½-3% of GNI*) higher than expected based on the economy's underlying performance (Irish Fiscal Advisory Council, 2019; Figure 1.14, Panel A). The concentration of corporate tax receipts continues to increase: the top 10 taxpaying companies accounted for 45% of overall corporate tax revenues in 2018, up from 39% in 2017 (Department of Finance, 2019c). The Department of Finance has taken the prudent approach of assuming that around one third of corporate tax receipts are non-recurring in their preparation of the subsequent year's budget. However, unbudgeted expenditures over the past few years have meant that a substantial portion of these non-recurring receipts have been spent within the year (Figure 1.14, Panel B).

Figure 1.14. Windfall corporate tax revenues have been accompanied by expenditure overruns



Note: In Panel A, corporate tax receipts are projected using the best-performing modelling approach outlined in Casey and Hannon (2016). In Panel B, the four largest departments by current expenditure are shown. Expenditure overruns are calculated as the difference between the outturn and budgeted gross current expenditure for that year.
Source: Irish Fiscal Advisory Council.

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The health sector has been a notable source of current expenditure overruns over the past few years, despite increased budget allocations. Another recurring issue has been the payment from the Department of Employment Affairs and Social Protection of Christmas bonuses to social welfare recipients that are unbudgeted and adjusted from year to year based on "prevailing conditions". In addition, some large public capital projects saw sizeable cost overruns. Ireland's Comptroller and Auditor General has undertaken a review into significant time and cost overruns in recent capital projects in the higher education sector (Comptroller and Auditor General, 2019). Across both current and capital public expenditures, the historical pattern of cost overruns that are balanced through supplementary government financing creates little incentive for future public spending efficiency.

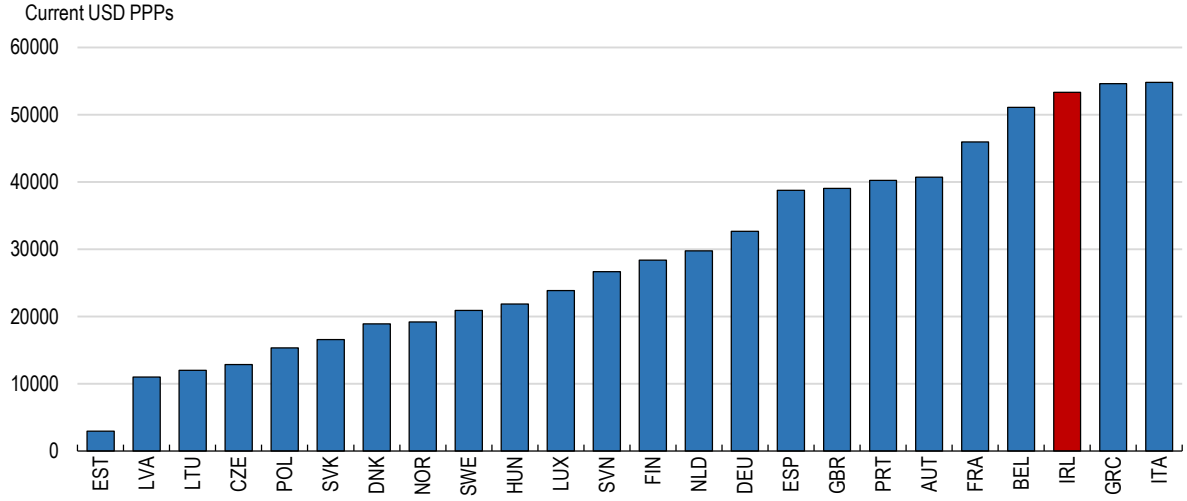
Further public spending overruns may crowd out other current or capital spending needs. As part of the *National Development Plan 2018-2027*, the government set aside €116 billion for public investment. This is a response to deep cuts to public capital investment through the crisis years and to expected future

demographic pressures on infrastructure. Many such projects are much needed and cost overruns or poor project selection that crowd out public investments with high social returns must be avoided. Alternatively, additional unbudgeted public spending could slow the necessary continued reduction in government debt if other spending plans are maintained through increased borrowing.

In prioritising, costing and delivering public capital projects, the need for better availability of detailed data on public assets was underlined in the *OECD Ireland Economic Survey 2018*. More broadly, a recent OECD evaluation of the Irish Government Economic and Evaluation Service identified poor data availability as an impediment to evidence-based policy making (OECD, 2020). A welcome development was the increased emphasis on improving data collection and identifying data gaps in the government's 2019 Spending Review. New tools have also been developed such as the Investment Projects and Programmes Tracker that provides information on the progress of all major investments that make up *Project Ireland 2040*. However, continued efforts should be made to systematically collect information on the performance of existing public assets to better enable transparent, evidence-based prioritisation of future infrastructure projects. New Zealand provides an example of a country that identified data gaps as an impediment to robust infrastructure planning. Subsequently, a cross-sector infrastructure evidence base was published in 2014 and updated thereafter. The database provides performance indicators related to public assets as well as scenario analysis to identify future demand pressures on the infrastructure stock.

Government debt ratios continue to trend down, but gross general government debt remains high at above 100% of modified gross national income (GNI*). For Ireland, GNI* is a better indicator of the capacity of the government to repay its debt, insofar as it is less affected by one-off factors related to the activities of multinational enterprises. In per capita terms, general government debt is one of the highest in the OECD (Figure 1.15). Over half of long-term Irish government bonds are held by non-residents, that come with a higher risk of sudden stop in the event of a negative shock (Department of Finance, 2019d). Refinancing risk has been reduced through a significant increase in the average maturity of Irish government debt over the past decade. By 2018, average debt maturity was high compared with other European countries at above 10 years (Department of Finance, 2019d).

Figure 1.15. Government debt remains high on a per capita basis



Note: Data for Norway are for 2015.
Source: OECD.

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The authorities have also now established the "Rainy Day Fund", for use in the event of a severe adverse economic shock (Table 1.5). Initially, €500 million were to be transferred to the Fund from the Exchequer each year until 2023, and so far the Fund has accumulated €1.5 billion in liquid assets. Nevertheless, in

preparing Budget 2020, the authorities chose not to transfer the earmarked €500 million to the Fund because of the potential challenges associated with a no-deal Brexit. Going forward, the transfer of the agreed amount to the Fund should be made each year, with the intended pool only reduced if a severe adverse economic shock does actually come to pass. Furthermore, the incoming government should commit to transferring further windfall corporate tax revenues to paying down general government debt and partly to the Fund to ensure future negative shocks can be offset through fiscal loosening.

Table 1.5. Past recommendations on public spending efficiency and taxation

Recommendations in the previous *Survey*	Actions taken since March 2018
Set medium-term government debt targets as a share of measured underlying economic activity (i.e. GNI*).	The government announced a target for public debt as a share of GNI* of 85% by 2025 and to 60% in the long-term.
Pay down general government debt with windfall revenue gains and implement the proposed Rainy Day Fund.	The National Surplus (Reserve Fund for Exceptional Contingencies) Bill 2018, which establishes the Rainy Day Fund, has now passed the Oireachtas.
Identify productivity-enhancing fiscal initiatives that could also have a large short-term impact on growth in the face of a negative shock.	In the event of a shock, the Rainy Day Fund could be used to maintain a planned level of capital spending, such as the projects currently planned in National Development Plan.
Reduce the number of VAT rates.	The number of VAT rates is unchanged. However, in Budget 2019, the government restored the VAT rate for most businesses in the hospitality sector to 13.5% from 9%.
Reassess property values more regularly for the purposes of calculating local property tax. At the same time, protect those low-income workers adversely impacted.	No specific action taken.
Systematically collect information on the performance of existing public assets to better enable transparent, evidence-based, prioritisation of future infrastructure projects.	The authorities improved data collection and identified data gaps as part of the 2019 *Spending Review*.

Looking forward, the fiscal framework needs further reform, as some of the fiscal rules outlined in the EU *Stability and Growth Pact* are not entirely suitable in the Irish context. Ireland's upwardly distorted GDP, along with inflated corporate tax receipts, flatter the Irish fiscal position when judged against fiscal rules that are based on GDP or on the closely-related measure of potential output growth that is harmonised across EU countries. As part of Budget 2020, the Department of Finance noted that key components of the EU fiscal rules such as the binding 3% of GDP threshold for the headline fiscal deficit, the 60% general government debt-to-GDP threshold, the "medium-term objective" and the "expenditure benchmark" (both of which depend on estimates of potential output growth) are misleading in the case of Ireland (Department of Finance, 2019e). To support the calibration of appropriate fiscal policy, Ireland should self-impose a more stringent set of fiscal targets. These should be based on GNI* (instead of GDP) and the measure of potential output growth that has been developed by Ireland's Department of Finance and endorsed by the Irish Fiscal Advisory Council. The authorities recently made progress in this regard, announcing a target for public debt as a share of GNI* of 60% in the long term and around 85% by 2025.

Ireland continues to be an active participant in efforts to advance international tax policy coordination. Numerous actions have been taken to implement recommendations from the OECD BEPS Action Plan. These include the introduction of country-by-country reporting for large multinational enterprises and the first OECD-compliant patent box, as well as early signature and ratification of the BEPS Multilateral Instrument.

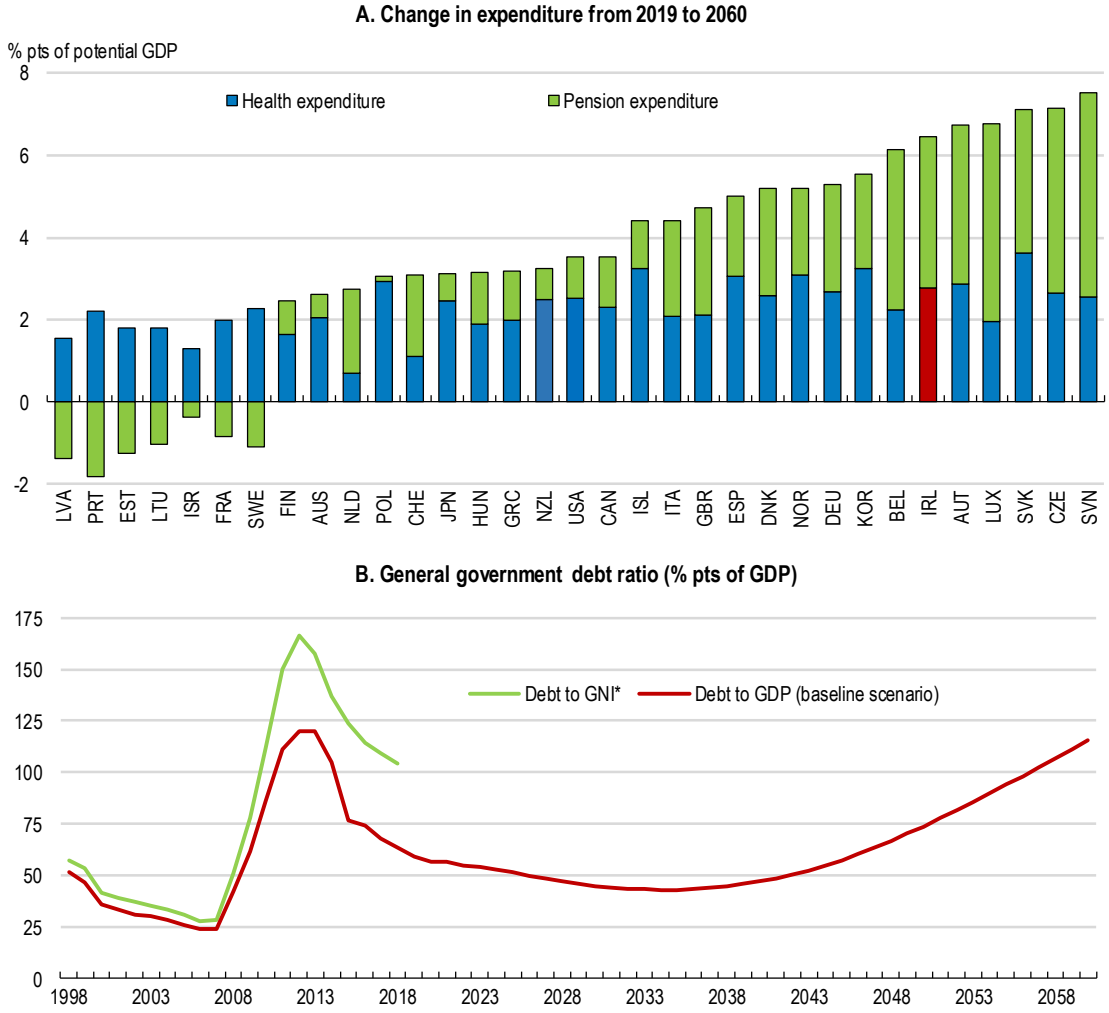
The OECD has recently released two consultation documents on potential changes to the International Tax System. These proposals fall under two Pillars. Under Pillar 1, the Secretariat has proposed a Unified Approach that would establish a new nexus and allocate increased taxing rights to market/user jurisdictions. Under the proposal, countries would be allocated some taxing rights that would not be dependent on physical presence but would be largely based on sales. (OECD, 2019a). Under Pillar 2, the consultation document outlines a proposal that would aim to ensure that all internationally operating businesses pay a minimum level of tax on their foreign income. This could impact the attractiveness of Ireland as a location for foreign direct investment. While many details of the proposals are still under

discussion by the Inclusive Framework on BEPS, such an agreement would go some way to addressing the tax policy challenges arising from the digitalisation of the economy.

Substantial fiscal pressures loom on the horizon

Ageing-related costs will exert substantial pressure on public finances over the coming years. Current trends suggest the increase in public expenditure on health and pensions will be one of the largest in the OECD, expanding by over 6% of GDP by 2060 (Figure 1.16, Panel A). Government debt is projected to rise back above 115% of GDP absent offsetting policy measures (Figure 1.16, Panel B). Ageing may also put downward pressure on revenues, as it will lower the proportion of people active in the formal labour market in a tax system that relies heavily on labour taxation. Growth-enhancing structural reforms may provide some offset, but this will not be enough to put government debt on a sustainable trajectory.

Figure 1.16. Ageing costs will create substantial fiscal challenges



Source: Simulations based on the OECD Economics Department Long-term Model.

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Future corporate tax revenues are also likely to slow. The authorities acknowledge that the windfall corporate tax revenues of recent years may not be sustained and new international tax rules around the digital economy could reduce corporate tax revenues further (Government of Ireland, 2019a). The impact

of international tax changes on Irish tax receipts depends heavily on the exact rules adopted. Notwithstanding considerable uncertainty, the authorities recently estimated that corporate tax receipts could be €500 million lower per year between 2022 and 2025 as a result of the implementation of BEPS (Government of Ireland, 2020). This does not take into account potential secondary effects, such as the location decisions of multinational firms.

The combination of still high public debt, elevated economic uncertainty and substantial future cost and revenue pressures require deep reforms to fiscal policy. There is scope to improve expenditure efficiency, but new streams of tax receipts will need to be found if government finances are to be made sustainable and large cuts to public services avoided. Ireland proved adept at implementing essential economic reforms that were well communicated to the population through the recent economic crisis, suggesting that such changes to fiscal policy are achievable.

Raising public spending efficiency

An ageing population will mean a greater share of government spending allocated to health, social care and pensions over the coming years. Combined with the fact that health and social protection have been experiencing the largest recent cost overruns (Figure 1.14, Panel B), improving public expenditure efficiency in these areas should be prioritised.

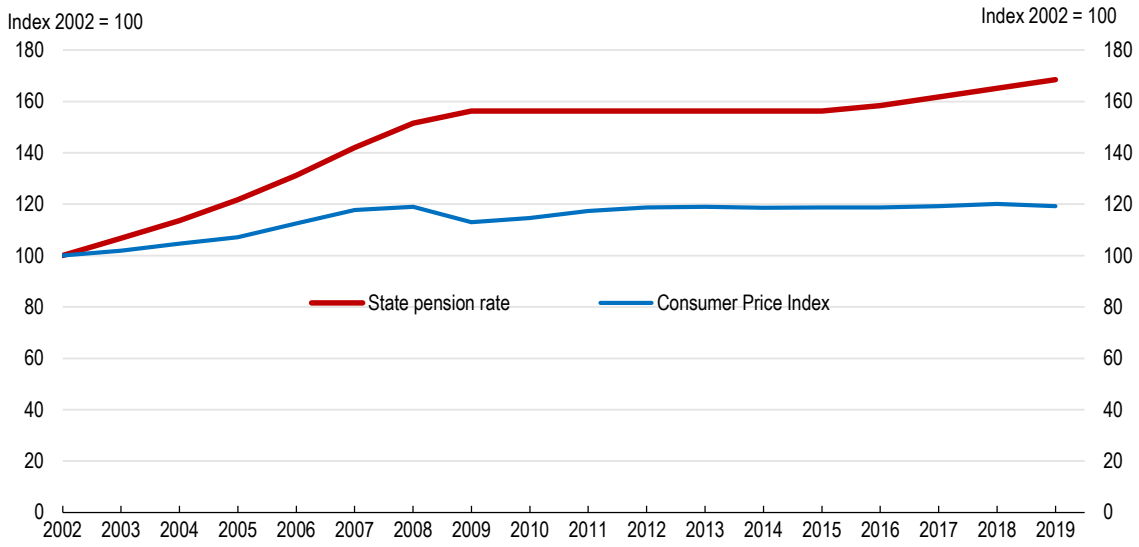
In the health sector, most of the recent increase in public funding has been directed toward hospitals. However, it has led to no significant increase in measured outputs (Lawless, 2018), insofar as the overall number of patients on hospital waiting lists has not declined (Health Service Executive, 2019). Unbudgeted health spending has been attributed to both weak spending controls and weak budget planning (Irish Fiscal Advisory Council, 2018). Several recent initiatives have sought to improve spending efficiency in hospitals. Activity-based funding (whereby budgets are allocated to each hospital based on the number and complexity of patients) has replaced block funding for inpatient and day-case procedures. The Health Service Executive also introduced an Accountability Framework for the sector, with a review undertaken in 2015. However, several of the review's recommendations, including the requirement for hospitals to produce their own productivity plans, have not been implemented.

The key instrument available to the Health Service Executive for budget planning is the National Service Plan. There are legislative requirements associated with these plans to have them set out the health services to be provided in the forthcoming year given the allocated budget envelope. Nevertheless, several of them have not been fulfilled in recent years (Connors, 2018). Going forward, the plan should: i) be drafted in line with the agreed budget published in mid-December every year, ii) provide estimates of the number of employees of the Health Service Executive during the period and the services to which they relate, iii) indicate the type and volume of health and personal social services to be provided during the plan period.

In the area of social protection, pension spending is anticipated to increase by around 0.7% of GDP over the next decade, accounting for half the increase in demographic-driven public costs. Ireland's state pension operates on a pay-as-you-go basis, meaning that pension disbursements are funded by the taxes and social contributions of current workers. An expected rise in the old-age dependency ratio, from 20.5% in 2016 (i.e. 4.9 workers for every old age dependent) to 44% in 2051 (Parliamentary Budget Office, 2019), will then threaten the sustainability of the system. To help tackle this challenge, the state pension age was increased to 66 in 2014 and will rise to 67 in 2021 and 68 in 2027. Thereafter, it ought to be linked to changes in life expectancy. There is also scope for private pensions to play a greater role in the system, as private pension coverage is currently low in Ireland (OECD, 2019b). The authorities outlined a *Roadmap for Pension Reform* in 2018 which included an auto-enrolment system, whereby private pension contributions from employers and employees (subject to an earnings ceiling) will be partially matched by the government. This measure designed to strengthen private pension savings is scheduled to be introduced in 2022.

At present, increases in the State pension are determined in a discretionary manner as part of the annual budget process. This contrasts with many other OECD countries where the benefit rate is indexed to domestic wage or price developments. Since 2002, the state pension benefit has risen by 65%, following a heavily pro-cyclical pattern, compared to a 20% rise in Irish consumer prices (Figure 1.17). Compared with other OECD countries, the value of the basic pension in Ireland appears adequate at present (OECD, 2017b). Indexation of future benefit increases to consumer price inflation would be a more transparent system that, based on recent historical experience, would produce budgetary savings. In a similar vein, Christmas bonuses to welfare recipients should be delinked from revenue outturns in order to improve fiscal sustainability and to avoid fiscal policy exacerbating fluctuations in economic conditions. These bonuses should also be systematically included in government budget plans.

Figure 1.17. Basic pension benefits have outpaced consumer prices



Source: Department of Employment Affairs and Social Protection, CSO.

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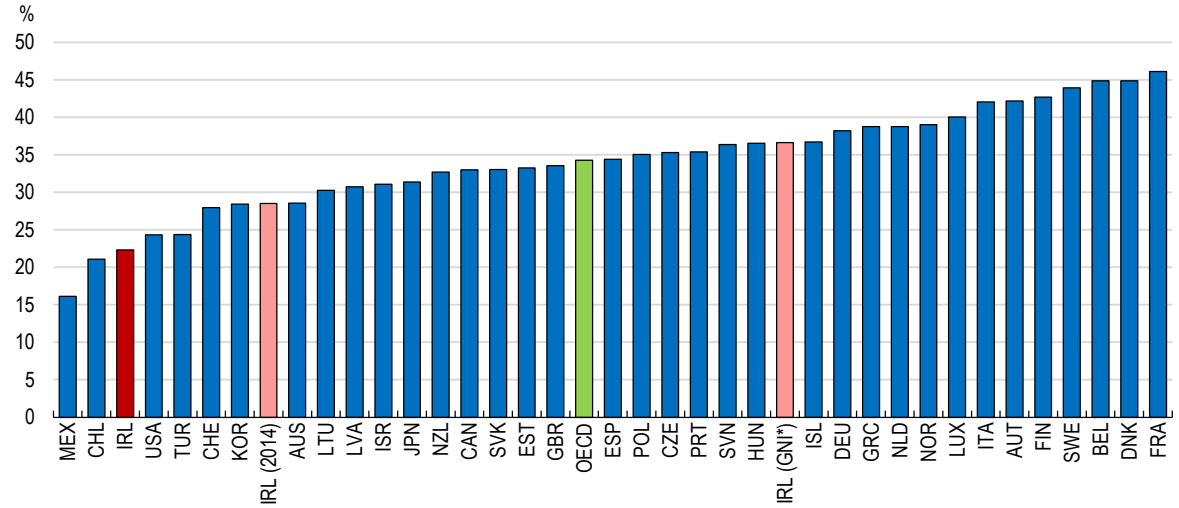
Raising revenues through growth-friendly tax sources

New sources of revenue are likely to be needed in addition to structural reforms and improvements in public spending efficiency to achieve a sustainable path of public debt. At present, the tax burden in Ireland is low compared with other OECD countries in Europe (Figure 1.18). In the first instance, the tax base of those forms of taxation proven to be less distortionary for economic activity or that dissuade undesirable activities should be broadened. Some changes in tax policy may have adverse distributional consequences that require offsetting policy adjustments to ensure that social cohesion is maintained.

Figure 1.18. The tax burden is low compared with most other European countries

Tax revenue as a percentage of GDP, 2018



Note: Data for Australia and Japan are for 2017. Given the distortions to Irish GDP, alternative measures for Ireland are also presented. Both the ratio of tax revenue to GDP in 2014 (before the significant distortions to Irish GDP occurred) and tax revenue as a share of modified gross national income (GNI*) are presented in pink. It should be noted that the latter measure is not strictly comparable to the measures for other countries that take GDP as the denominator.
Source: OECD Revenue Statistics database.

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A recent laudable tax policy change was the restoration of the VAT rate for most businesses in the hospitality sector to 13.5% (from 9%), announced in Budget 2019 (Table 1.4). Consumption taxes are less distortionary to the economy than some other taxes such as those on income (Johansson et al., 2008) and the 2011 reduction of the Value Added Tax (VAT) rate for the hospitality sector to 9% had little economic merit. The experience of other European countries such as France suggest that the stimulatory impact of such measures on employment are modest (Benzarti and Carloni, 2017). Moreover, as many of the items in the sector are disproportionately consumed by those with relatively high incomes, the reinstatement of the 13.5% VAT rate for hospitality should not harm inclusiveness.

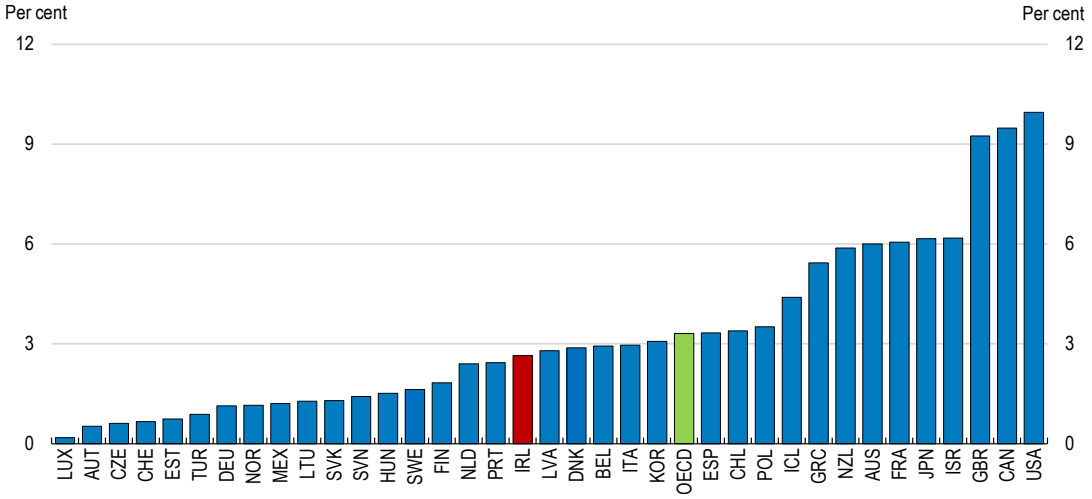
As highlighted in the *OECD Ireland Economic Survey 2018*, there is scope to further broaden the tax base and improve the efficiency of the tax system by moving from five different VAT rates to three. One aspect of this reform would be moving all items that are currently taxed at the zero rate to a VAT rate of 5%. As the zero rate is currently applied to many necessities (i.e. most food, books, children's clothes and shoes, oral medicines), such a move would likely have adverse consequences for low-income households. With this in mind, part of the revenues raised from the reform should be used for targeted transfers to those on low incomes. Overall, a reform package that involved streamlining the VAT rates at the same time as increasing transfers to low-income households could improve the efficiency of the tax and transfer system and raise around 0.5% of GDP in government revenue (Table 1.6).

Ireland also relies relatively little on some other efficient tax sources, such as recurrent taxes on immovable property (Figure 1.19). Such taxes are less distortionary than taxes on income because they have less of an impact on decisions to supply labour, invest in human capital and other assets, produce and innovate (Johansson et al., 2008). As emphasised in the 2018 *OECD Ireland Economic Survey*, there is scope to increase revenues from recurrent property taxation by more regularly updating market values. However, since then, the authorities have delayed the revaluation of the properties that are the basis of the local property tax until 2020. This follows an earlier delay of the revaluation from 2016 to 2019. For most properties, taxes are being paid on their 2013 value or not at all (if built since 2013). Given steady increases

in house prices, households in some locations would face a steep hike in property tax liabilities if the base were updated to the 2019 market value. To ensure a measure of stability in local property tax bills and protect the revenue source, an interdepartmental group has recently proposed several alternative methods for the revaluation.

Figure 1.19. Recurrent taxes on immovable property are underutilised

Recurrent taxes on immovable property, % of total taxation



Source: OECD Revenue Statistics database.

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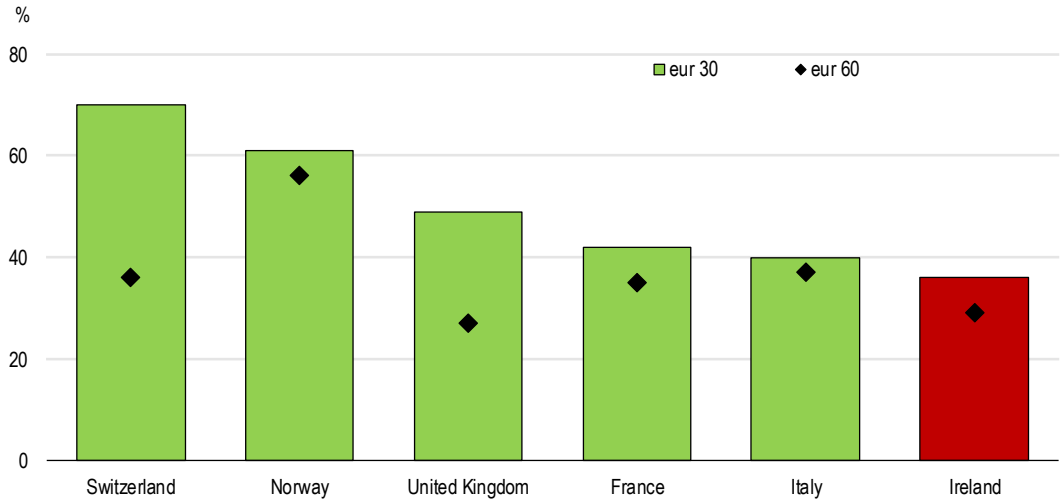
Going forward, more regular revaluations of the local property tax base are essential. These should continue to be calculated on lagged valuations of dwelling prices to minimise the pro-cyclicality of the revenue source. More regular revaluations will help achieve the objective of minimising large and unexpected adjustments in the property tax liabilities of households. The fact that a higher tax rate is currently applied to properties valued at above €1 million and that the steepest rise in property values since 2013 has been in Dublin (a comparatively high-income area) suggests that a revaluation is unlikely to worsen aggregate income inequality. Nevertheless, harmful distributional consequences of changes in property tax liabilities should continue to be monitored. As further discussed in Chapter 2, the authorities may also consider replacing some of the current array of property taxes, such as stamp duty, with a recurrent land tax levied on site value. This could be done in a revenue-neutral way, but would encourage more efficient land use at the same time as having much less distortionary impact on the investment decisions of households and businesses (Blöchliger, 2015).

Environmentally-related taxes also need to be increased in order to reduce the damage that households and businesses do to the natural environment. Ireland will not achieve its targeted reductions in greenhouse gas emissions by 2020 or 2030, based on current policy settings. Environment-related taxation remains low compared with the average OECD country and less than half of Ireland's energy-related CO_2 emissions are priced above €30 per tonne, a low-end estimate of climate-related cost (Figure 1.20). The Irish government has expressed a deep commitment to decarbonisation and a Climate Action Plan has been published. Therein, it proposed that the carbon tax be raised from €20 per tonne of CO_2 to €80 by 2030. The first step in this process was taken in Budget 2020, with the carbon tax raised to €26 per tonne of CO_2 on petrol and diesel (its implementation for other fuels is being delayed until May 2020, after the winter heating season). Sustained action needs to be taken to achieve this policy adjustment, by increasing the carbon tax each year according to a schedule that is well communicated to households and businesses.

Distributional and poverty effects should be considered in designing a policy package that allows for steady upward adjustments in the carbon tax. Recent simulation results suggest that an increase in the carbon tax to €30 per tonne of CO_2 would induce a 4% decline in emissions (Tovar Reaños and Lynch, 2019). However, the policy change is found to be regressive, as energy expenditure makes up a relatively large share of the expenditure bundle of poorer households. According to the simulations, such distributional consequences could be entirely unwound by recycling some of the increase in carbon tax revenues in the form of a targeted transfer to poorer households through the social welfare system. Nevertheless, such transfers should be thoughtfully designed to avoid disincentivising work. In increasing the carbon tax in Budget 2020, three different uses for the revenues were identified by the Minister of Public Expenditure and Reform: i) support for low-income families through an increase in the winter fuel allowance and energy efficiency upgrades for households at risk of energy poverty; ii) energy efficiency upgrades and new transition programmes for the Midlands region, which has seen job losses in the peat harvesting industry owing partly to government commitments to scale back peat burning in power stations; iii) measures to promote behavioural change such as investment in cycling projects and electric vehicle infrastructure.

Figure 1.20. Environmental taxes are low

% of total CO2 emissions from energy use, EUR per tCO2, 2015



Source: OECD.

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Recent experience from other OECD countries may be useful as the authorities consider how to offset any regressive effects of future increases in the carbon tax. Simulations for Germany suggest that using two thirds of a carbon tax on transport and heating fuels for per capita lump-sum transfers would avoid making large groups of households worse off and would make most families as well as low-income households with relatively low per capita energy consumption better off (Bach et al., 2019). It may also be prudent to distribute such a payment ahead of the tax taking effect in order to help garner public support. An example of successful implementation of a carbon tax is British Columbia in Canada, which redistributed the revenues from the tax to households through tax reform. At the federal level, Canada has also used per capita lump sum transfers as well as transfers that vary depending on the remoteness of a household location. Location-contingent transfers could help reduce financial pressure on car-dependent households. Such transfers could be temporary and need not influence incentives if related to location at the time of introduction of the tax.

At the same time, other aspects of tax policy can be reformed to better deter environmentally damaging activities. The revenues derived from such adjustments can be used to undertake new green projects, to

reduce other forms of taxation or to lower the government's outstanding debt burden. Synthetic fertilisers are currently at the zero VAT rate, despite the negative environmental consequences of their use including soil and water pollution. With the broader reform of the VAT system recommended above, such fertilisers should eventually be moved to, at least, the standard VAT rate.

Box 1.2. Quantifying the impact of selected policy recommendations

Table 1.6 presents estimates of the fiscal effects of some of the recommended reforms. The quantification is merely indicative and does not allow for behavioural responses or the impact of the tax and spending measures on GDP growth. Table 1.7 quantifies the impact on growth of some of the reforms recommended in this Survey (quantification is not feasible for all of them).

Table 1.6. Illustrative fiscal impact of recommended reforms

Fiscal savings (+) and costs (-)

	% of GDP	% of GNI*
Expenditure items		
Improve the spending efficiency of the health sector	0.8	1.3
Additional health spending	-0.9	-1.4
Increased active labour market programme spending	-0.6	-1.1
Total - expenditure	**-0.7**	**-1.2**
Revenue items		
Broaden and streamline the VAT base	0.5	0.7
Increase recurrent property taxation	0.9	1.5
Total – tax reforms	**1.4**	**2.2**
Total net fiscal savings (+) or costs (-)	**0.7**	**1.0**

Note: The improvement in health spending efficiency assumes that health spending per capita on government schemes converges to the OECD average using 2018 as reference year. The additional health spending is based on the estimated recurrent cost of implementing the *Sláintecare* plan (Committee on the Future of Healthcare, 2017). The increase in active labour market programme spending assumes that both per participant spending and participation relative to the size of the labour force increases to the average of the top half of OECD countries. The scenario assumes that some offsetting savings are generated by streamlining passive labour market programmes at the same time. The illustrative VAT reform involves moving all VAT items to either a 5%, 15% or 25% rate, with the revenue yield from moving zero rate items to a 5% rate entirely spent on direct transfers to low-income households. The revenue estimates for the VAT reform are taken from Department of Finance (2019f). The additional property tax yield assumes that Ireland increases the share of recurrent property taxation in total taxation to the average of the top quartile of the distribution of OECD countries.

Table 1.7. Illustrative impact on GDP per capita from structural reforms

Difference in GDP per capita level from the baseline 10 years after the reforms, %

Reform	Description	%
Further reduce product market regulation	Reforms that include reducing barriers to entry in legal services and further simplify licensing requirements and administrative procedures are undertaken over five years. The reforms are assumed to move Ireland's product market regulation settings to the average of the quartile of countries with the most competition-friendly competition policy settings.	1.4
New training programmes	Educational attainment of the population gradually increases by 5% over 10 years. This would take Ireland from being ranked 22nd in the OECD (based on the measure of human capital from the Wittgenstein Centre for Demography and Global Human Capital) to number 18th at 2030.	1.3
Ensure effective enforcement of the new criminal law	Improve Ireland's rule of law over five years so it corresponds with the average of the top quartile of OECD countries on the World Bank Rule of Law Index.	1.6
Total		**4.3**

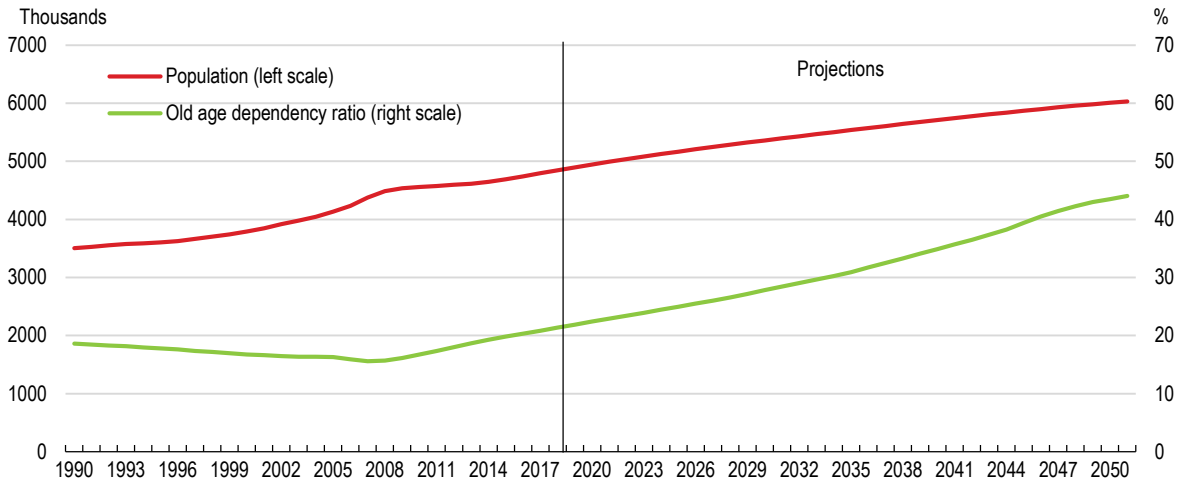
Note: The model used for these simulations is a supply-side model focusing on the long-run. As such, it is not well suited to incorporating the implied increase in net fiscal savings highlighted in Box 1.6, partly because these are funded by recommended tax base broadening measures that are more likely to impact demand in the short to medium-term.
Source: Simulations based on the OECD Economics Department Long-term Model.

There is also a need for new policy settings that reduce road congestion. Dublin was the third most congested OECD city in 2018, behind Istanbul and Mexico City, according to the Tom Tom Traffic Index. In this context, the government should consider introducing congestion charging to incentivise avoiding trips at busy times and greater use of public transport. Nevertheless, before implementing such a policy, it is important to ensure adequate availability of alternative modes of transport to accommodate those switching away from motor vehicle travel. As part of the *National Development Plan 2018-2027*, the authorities prioritised new train infrastructure (e.g. the Metro link and DART expansion in Dublin), an overhaul of the bus system in Ireland's cities and the expansion of cycling and walking infrastructure. At the same time, new modes of shared transport should be actively promoted (International Transport Forum, 2018; Chapter 2) and demand-management tools such as greater restrictions on parking should continue to be pursued. Along with congestion charging, distance-based charges for motor vehicles may need to be considered in the future to offset a depletion in government revenues as the car fleet moves further towards electric vehicles that pay no fuel excise tax.

Medium-term policy challenges

Looking ahead, there is a risk that capacity constraints are exacerbated by demographic pressures (Figure 1.21). The population is expected to grow by one quarter and the old age dependency ratio will more than double by 2050.

Figure 1.21. The population will grow and age markedly



Note: Projections are based on a central scenario assumption for migration and fertility.
Source: CSO.

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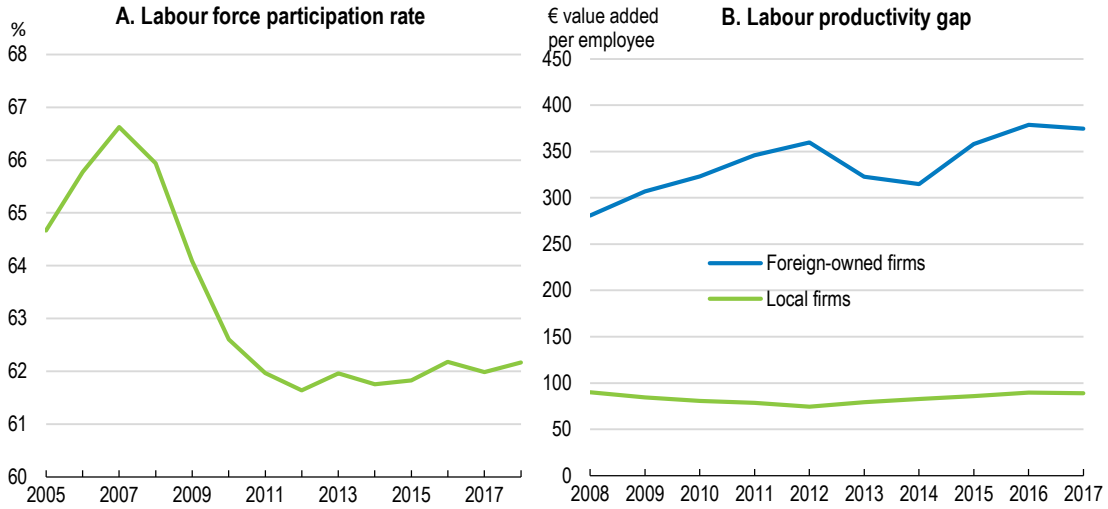
To meet this challenge, the supply side of the economy will need to continue to evolve. The labour force participation rate has fallen over the past decade as the population has begun to age and more young people have chosen to stay in education (Figure 1.22, Panel A). Ensuring that those that who wish to work are supported in doing so will be important over the coming years to promote both the inclusiveness and the competitiveness of the economy. This will require maintaining a health system that supports employment later in life.

Figure 1.22. Labour participation and productivity of local firms remain low



Note: In Panel A, the labour force participation rate of the population is calculated as a four-quarter average and is based on the population aged over 15. In Panel B, data are for those firms in contact with the enterprise agencies of the Department of Business, Enterprise and Innovation.
Source: CSO, Department of Business, Enterprise and Innovation.

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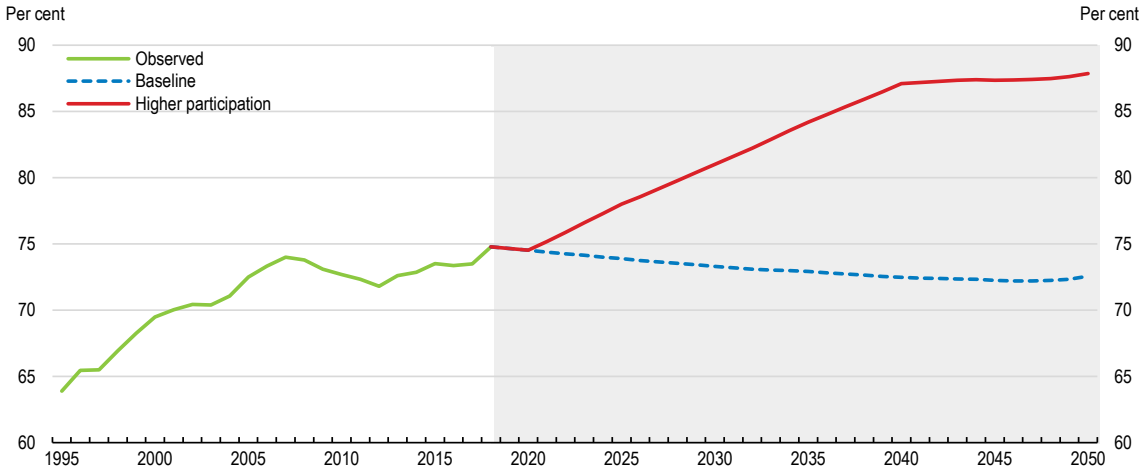
Improving the efficiency of production processes will also be key. The *2018 OECD Economic Survey of Ireland* focused on supply-side issues stemming from the weak productivity growth of locally-owned enterprises (Figure 1.22, Panel B). The large productivity gap between foreign-owned and locally-owned enterprises has translated into wage differentials between the two types of firms, contributing to Ireland's high level of market income inequality (Figure 1.1, further above). As such, boosting productivity in local businesses should also benefit inclusiveness. One area where government can support productivity is by ensuring institutional arrangements prevent and sanction economic crimes. Concurrently, an expanding economy and population will need to use natural resources more efficiently. This is particularly the case given the increasing risk of severe and irreversible impacts stemming from climate change.

Better utilisation of the labour force to help alleviate capacity constraints

Future Jobs Ireland, the medium-term economic development strategy, sets a target of raising the labour force participation rates of those aged between 25 and 69 from 74.8% in 2018 to 78% by 2025 (Department of Business, Enterprise and Innovation, 2019). To achieve this, a dramatic increase in the labour force participation of some cohorts will be required, notably women and older workers. For example, the illustrative scenario outlined in Figure 1.23 ("higher participation") would put the labour force participation rate on a path to allow the 2025 target to be achieved. Under this illustrative path, the gender participation gap for those aged between 25 and 64 (currently at 13.6%) would need to be closed by 2040 and the participation rate of those aged 65-69 to rise from the currently observed 23.3% to 55.3% by 2050.

Figure 1.23. Labour force growth will significantly slow down without higher participation

Labour force participation rate of those aged between 25 and 69



Note: "Baseline" assumes that the labour force participation rates for both genders and all five-year age groups remain at their levels of 2018. "Higher participation" assumes the participation rates for each gender and age group as follows: the rates of men in each five-year age group between 25-29 and 45-49 increase to the levels prior to the crisis (averages over 2000-07) by 2025; the rates for men in five-year age groups of 50-54, 55-59 and 60-64 converge to that of the 45-49 age group by 2030, 2035 and 2040, respectively; the participation rates for men and women in age groups of 65-69 and 70-74 converge to the averages of the top third of OECD countries by 2035 and continue to rise at the same pace through 2050; the participation rates for women in each age group between 25-29 and 60-64 converge to those for men by 2040
Source: OECD Labour Force Statistics; Central Statistics Office, Population & Labour Force Projections; OECD calculations.

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Reducing labour underutilisation and the pool of long-term unemployed

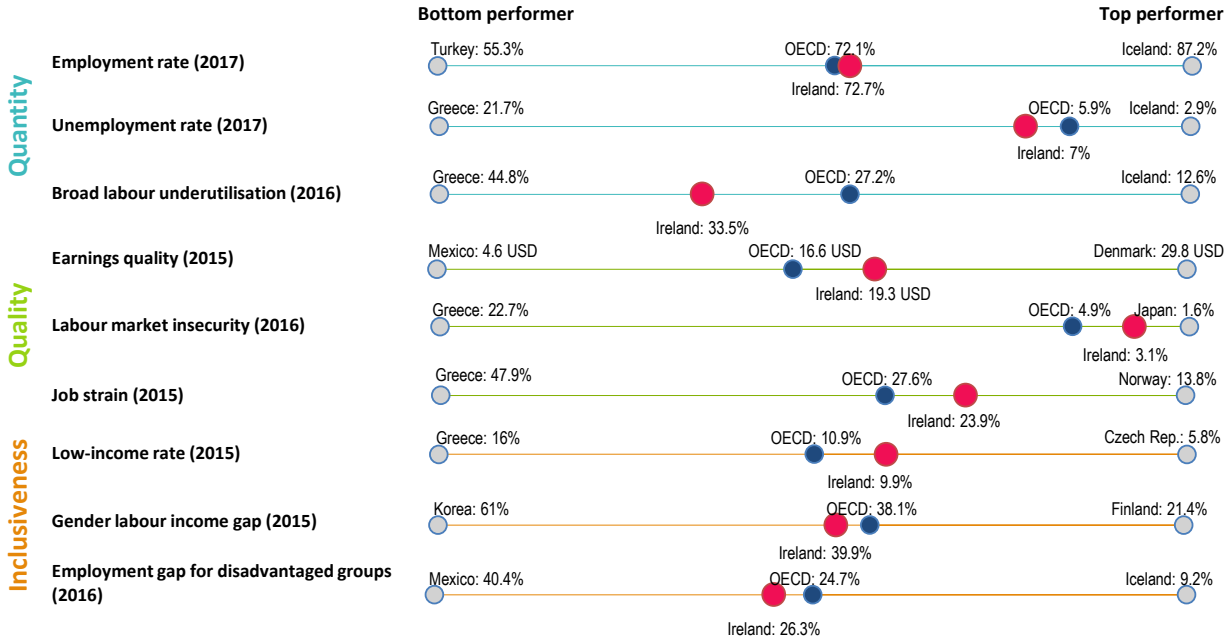
As identified in the recent *OECD Jobs Strategy*, Ireland's labour underutilisation rate, which includes those in the population who do not participate, is higher than the OECD average (Figure 1.24; OECD, 2018b). This reflects underemployment for the young and other groups, including women with children, older workers and the disabled. A policy priority is expanding the quantity of high-quality jobs in a way that improves labour market inclusiveness. Product market reforms that reduce barriers to entry for new firms, promote the expansion of high-performing firms and the orderly exit of those that underperform will be important for promoting new high-quality jobs (see Chapter 2).

While labour force participation of men matches the OECD and the EU averages, that of women is lower than the EU average for those between the ages of 40 and 59 (Figure 1.25, Panel A and B). In Ireland, caring responsibilities tend to fall on women: the gender gap in unpaid work hours is one of the highest in Europe (Russell et al., 2019). While young women's participation rates have risen as public spending on family benefits increased from 2.3% of modified gross national income in 2000 to 3.6% in 2015, the current middle-aged female cohorts aged 40 to 59 had lower participation profiles when they were 35 to 39. Such women are also more often responsible for adult care than men or those females in younger age cohorts (Russell et al., 2019).

Reducing barriers to high-quality jobs for cohorts with low participation and employment rates, in particular middle-aged women, requires significant investment in job training. *Springboard+*, a labour market activation and upskilling and reskilling programme, provides a number of courses for those returning to work, including women re-entering the workforce after a period of childcare. In addition, "Women ReBOOT", an enterprise-led initiative co-funded by Skillnet Ireland, the national agency for workforce learning, supports inactive women through coaching, work placements and skills development to re-enter the technology sector after a career break. While achieving a high conversion rate to employment of 85%,

participation in the programme has been limited to just over 100 women since 2017 (Government of Ireland, 2019b). The authorities should consider scaling up the programme, given the evidence of positive employment outcomes.

Figure 1.24. Ireland's labour market performance



Note: Broad labour underutilisation: share of inactive, unemployed or involuntary part-timers (15-64) in population (%), excluding youth (15-29) in education and not in employment (%). Earnings quality: gross hourly earnings in USD adjusted for inequality. Labour market insecurity: expected monetary loss associated with the risk of becoming unemployed as a share of previous earnings. Job strain: percentage of workers in jobs with a combination of high job demands and few job resources to meet those demands. Low-income rate: share of working-age persons living with less than 50% of median equivalised household disposable income. Gender labour income gap: difference between per capita annual earnings of men and women (% of per capita earnings of men). Employment gap for disadvantaged groups: average difference in the prime-age men's employment rate and the rates for five disadvantaged groups (mothers with children, youth who are not in full-time education or training, workers aged 55-64, non-natives, and persons with disabilities; % of the prime-age men's rate). It should be noted that Ireland-specific statistics published by Ireland's Central Statistics Office indicate that the unemployment rate fell to 5.8% in 2018, while the employment rate moved down to 68.7%.
Source: OECD Jobs Strategy dashboard.

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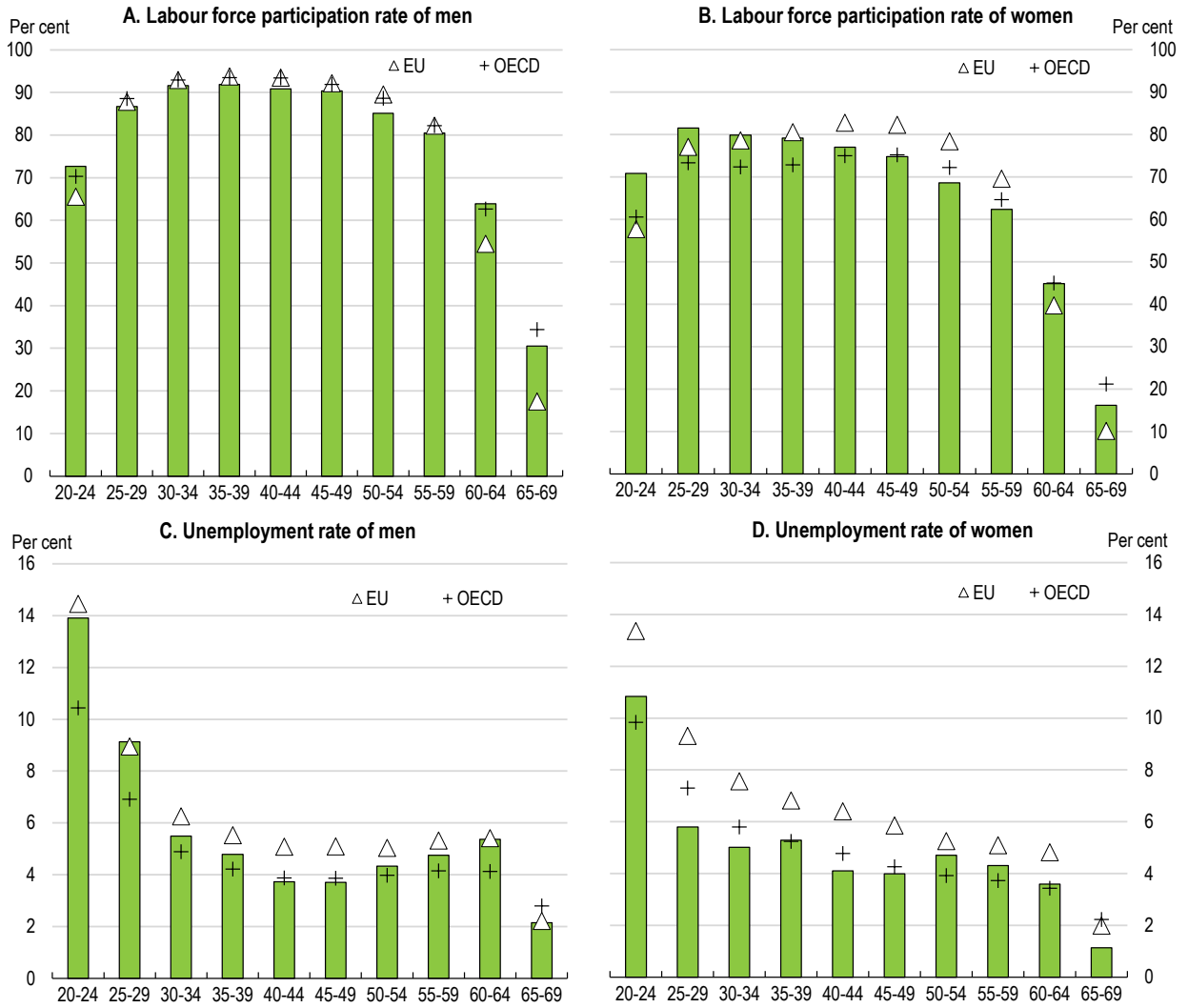
Policymakers should also seek to reduce any impediments for women who wish to work longer hours: more than 30% of women work less than 30 hours per week, a significantly higher proportion than for men (Figure 1.26, Panel B). The government introduced financial supports for working families in recent years, with measures such as increased earnings thresholds for the removal of welfare benefits (Table 1.8). Further building up the capacity of formal long-term care arrangements will also support women undertaking unpaid adult care for long-term care dependent relatives if they wish to increase paid work.

Figure 1.25. There is scope for further utilisation of female, young and old labour force



Source: OECD Labour Force Statistics database.

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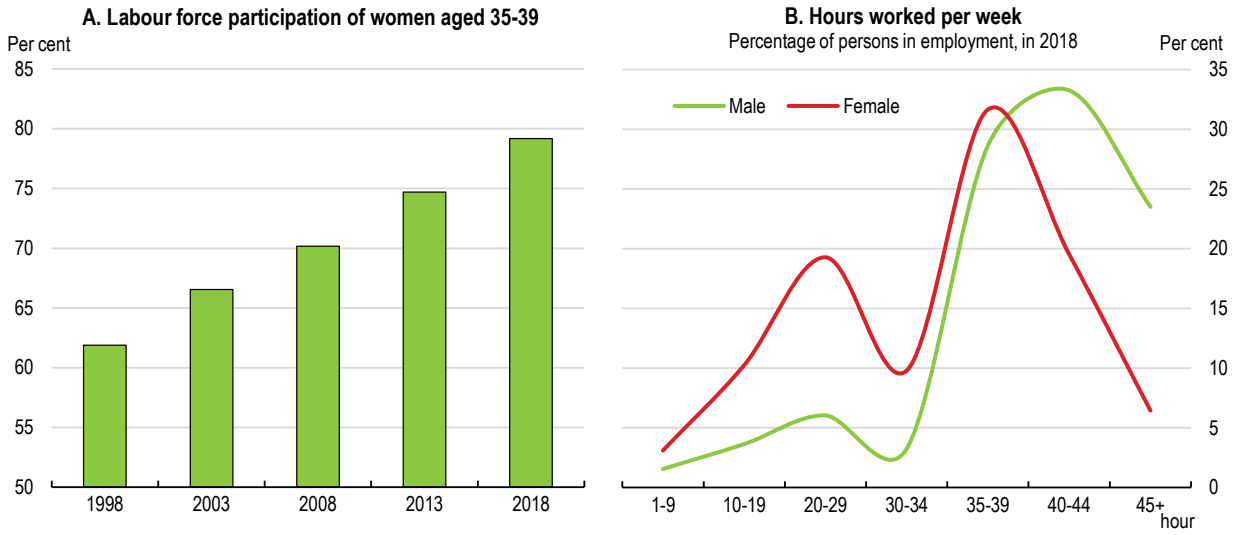
While a decade of increases in public spending have made childcare benefits comparable to other OECD countries, increasing fees by childcare providers have partially offset the increase in benefits to leave net childcare costs significantly higher (Table 1.9). A recent empirical study found a negative link between childcare costs and the employment of Irish females: 10% higher childcare costs were associated with half an hour less paid work by mothers per week (Russel, et al., 2018). In 2017, the enrolment rate of early childhood education and care for children aged 0-2 was 7.8%, well below the OECD average of 26.3%, while full enrolment was almost achieved for those aged 3-5 with the rate at 98.4% (OECD, 2019c). The government launched the new National Childcare Scheme in November 2019, shifting away from childcare benefits as social protection entitlements towards a comprehensive and progressive system of universal and income-based benefits. Budget 2019 adjusted the originally planned income thresholds so that more middle and higher income households can now access the benefits, while those below the relative poverty line benefit from the very highest subsidy rates under the scheme. The new programme should be accompanied by significant measures to expand quality childcare capacity. For example, the authorities are currently considering permitting National Childcare Scheme subsidies to be used for childminding services (non-relative care of children within the childminder's family setting). Although this may improve

access and affordability to childcare, expanding the use of such services should be coupled with appropriate regulation, as well as training and supports for the providers that improve service quality (Government of Ireland, 2019c).

Table 1.8. Past recommendations on improving labour force utilisation

Recommendations in the previous *Survey*	Actions taken since March 2018
To adapt Pathways to Work to the changing structure of the Irish economy, establish a regular review and evaluation of the profiling model. Enlarge the model to encompass those more detached from the labour market.	No specific action taken.
To respond to the demand for specialised skills, concentrate training efforts in those schemes providing high level skills such as Momentum, Springboard or ICT conversion courses. Progression pathways between different education levels should be stepped up.	*Springboard+ 2018* was launched in May 2018, with courses commencing in Autumn 2018. A further round of courses under *Springboard+ 2019* was launched in May 2019. *Springboard+* provides free and 90% funded full-time and part-time higher education courses in areas where there are identified skills needs. Courses to date have been delivered in areas such as ICT, manufacturing (including the biopharma sector), construction, entrepreneurship, cross-enterprise skills, the hospitality sector and international financial services. Springboard+ incorporates the ICT skills conversion programme.
To provide skilled workers to emerging sectors, expand the apprenticeship beyond craft-related areas involving the SME sector, better align curricula of vocational training to unemployed profiles and to employer demands and increase its workplace component.	29 new consortia led programmes in areas including ICT, bio-pharma and logistics bring the total number of apprenticeships now available to 54.
To reduce mismatches between supply and demand of skills, better align the content of education and training schemes so that they provide skills required in the expanding sectors.	*Springboard+* courses seek to address an identified current or future skills need. *Springboard+ 2019* was launched in May 2019, with particular emphasis on programmes to improve digital skills, transversal skills, management and leadership skills.
Upskill long-term unemployed by improving both the quantity and quality of training via public employment services or via private providers.	In October 2018, a new work experience programme (Youth Employment Support Scheme) was introduced, targeted specifically at young jobseekers who are long-term unemployed or face significant barriers to gaining employment.
Fully enforce the obligations of the unemployed and improve the enforcement framework by defining more objectively the suitable job offer that the benefit recipient has to accept in terms of wages and contract types.	No specific action taken.
Review programmes for the long-term unemployed and fully roll out the new information system for training programmes.	An updated review of the JobPath service is currently being undertaken.
Make all social benefits conditional on earnings, not employment status, and withdraw them more gradually as earnings rise.	No specific action taken.
Increase the share of funding to training for those in employment and financial support to workers undertaking postgraduate courses.	*Springboard+* was expanded in 2018 so that all courses are now open to people irrespective of their employment status. Courses are either free or very heavily subsidised for employed participants. In 2018, an additional €3 million was allocated to *Springboard+* which provided for over 1,600 additional places during 2018. In 2019, a further €4 million was provided.

Figure 1.26. Labour force participation of younger women has significantly increased but many women work considerably fewer hours



Source: OECD Labour Force Statistics database; CSO, Labour Force Survey.

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Table 1.9. Net childcare costs in Ireland are still high

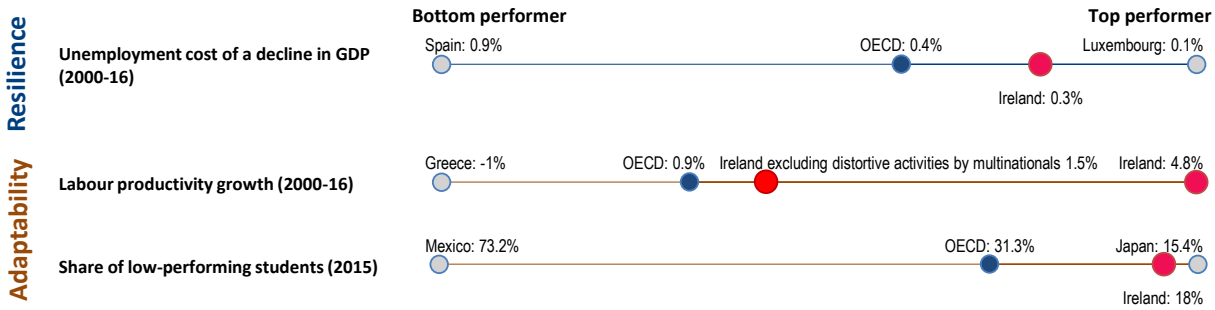
Per cent of net income of a model household with two children

	Ireland		OECD	
	2008	2018	2008	2018
Single parent earning minimum wage				
Gross childcare fees	75.9	82.1	56.3	45.1
Childcare benefits[1]	7.6	34.8	39.5	31.4
Net childcare cost	68.3	47.3	16.8	13.8
Couple earning average wage[2]				
Gross childcare fees	25.0	30.1	20.4	18.8
Childcare benefits[1]	2.5	8.4	6.1	6.1
Net childcare cost	22.5	21.6	14.3	12.7

1. Includes tax relief and housing benefits.
2. Both the first adult and the partner earn average wages.
Source: OECD Tax-Benefit Models.

Across age cohorts, labour force participation drops considerably between 55-59 and 60-64 for both men and women (Figure 1.25, Panel A and B). This pattern is also observed in other OECD countries, but Ireland's participation rate for those in the 65-69 age group is below the OECD average, despite longer life expectancy. The effective retirement age for men currently matches the public pension eligibility age of 66, but that for women is 64.2, falling short of it. Retaining older workers in the labour market is essential for their income security, given that the pension eligibility age is set to increase to 67 in 2021 and 68 in 2028. Promoting employment of the elderly also has significant macroeconomic implications (see above). As both skills and physical capacity can deteriorate with age, providing effective life-long job training opportunities as well as more flexible work arrangements are key for enabling a longer work life.

Figure 1.27. Framework conditions of the Irish labour market



Note: Resilience: average increase in unemployment rate over 3 years after a negative shock to GDP of 1% (2000-16); Labour productivity growth: annual average productivity growth (2010-16), measured in per worker terms. Share of low-performing students: % share of 15-year-olds not in secondary school or scoring below Level 2 in PISA (2015). Labour productivity of Ireland excluding distortive activities by multinationals are calculated based on the ratio between GDP and modified domestic demand published by the Central Statistics Office, which excludes the impact of trade in aircraft by aircraft leasing companies and trade in R&D service imports and intellectual property.
Source: OECD, OECD Jobs Strategy dashboard; Central Statistics Office; OECD calculations.

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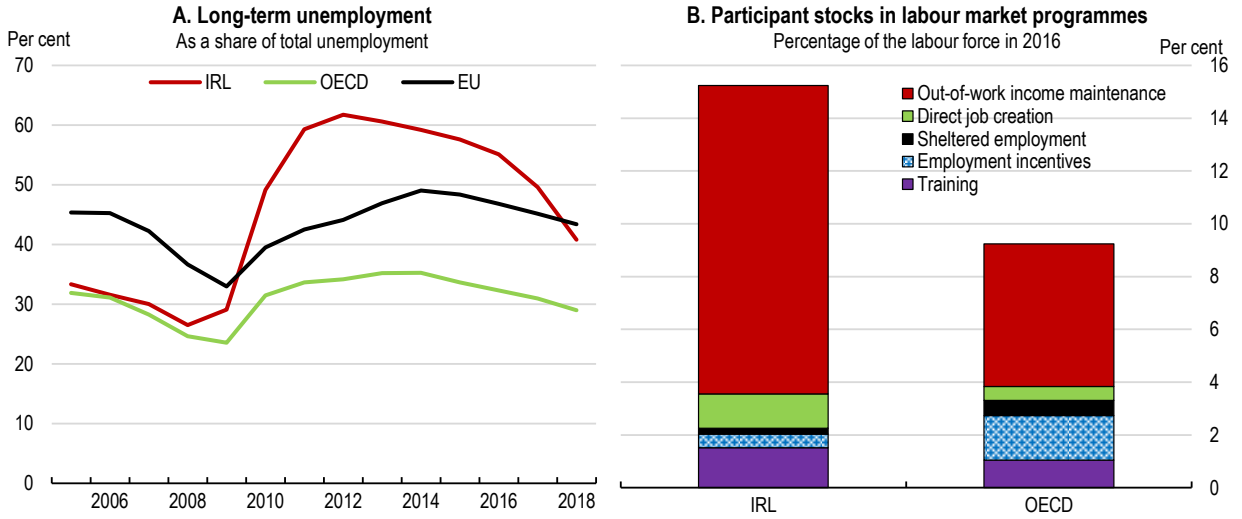
Focusing on those that are unemployed, the aggregate unemployment rate has now declined to near pre-crisis levels, though outcomes vary depending on the worker cohort. Unemployment remains high among younger men, while it is low for women relative to other EU countries across all age cohorts (Figure 1.25, Panel C and D). This largely stems from young men's employment being concentrated in sectors hit hardest by the crisis, notably construction.

The high share of long-term unemployment also remains a source of concern, as long spells out of employment can deprive workers of their skills and make reintegration to employment more difficult. Although the share of those unemployed for one year and over fell to 40.8% in 2018, it remained well above the OECD average and the share of long-term unemployed prior to the crisis (Figure 1.28, Panel A). In addition, the share of those unemployed for four years and over among the long-term unemployed rose from 23.8% to 43.8% between 2012 and 2016 (Bergin and Kelly, 2018). While the share of long-term unemployment continued to fall in 2019 towards the level observed before the crisis, labour market programmes should continue to focus on further reducing the share of long-term unemployment.

Compared to the OECD average, labour market programmes in Ireland focus more on out-of-work income maintenance (Figure 1.28, Panel B). This protects the unemployed from falling into poverty, but benefits must be designed in a way so as not to disincentivise taking up a job (OECD 2018b). The policy mix could be shifted to better encourage the unemployed to return to work quickly, through strengthening the emphasis on employment incentives and spending on training programmes, which is below the OECD average on a per participant basis (see Chapter 2). In 2012, the Public Employment Service (PES) of Ireland introduced a one-stop-shop service named *Intreo*, which tailors all employment and income supports for individual jobseekers. An evaluation of the *Intreo* model in the early years of its operation found no substantial impact of the reform on the probability of a jobseeker entering an education, training or employment placement course (Kelly et al., 2019). It noted that the reform focused on streamlining the activation process instead of adjusting the active labour market programmes provided. Going forward, ongoing assessment of the effectiveness of the activation approach, given the changing characteristics of jobseekers, is necessary. This is likely to require additional data collection efforts (Lavelle and Callaghan, 2018; Chapter 2). The activation programmes should also focus on building the work skills of disabled workers, given that only 30% of disabled workers were at work in 2011, implying a 31-percentage point gap with those without disabilities, the fourth largest in the EU (Watson et al., 2017).

Figure 1.28. Labour market programmes should shift focus to prevention of long-term unemployment



Note: In Panel A, long-term unemployment refers to unemployment for one year and over. It should be noted that Ireland-specific statistics published by Ireland's Central Statistics Office show that the proportion of those unemployed for one year and over was 36.3% in 2018. In Panel B, out-of-work income maintenance includes early retirement programmes and employment incentives includes start-up incentives.
Source: OECD Labour Force Statistics database; OECD Public Expenditure and Participant Stocks on LMP dataset.

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The adult learning system is key for adapting to technological and demographic changes

The Irish labour market has exhibited flexibility in adjusting to ongoing structural changes and economic shocks. This has served Ireland well as it has deepened its integration into the global economy and as new technologies have been increasingly adopted by the business sector (Chapter 2). Labour productivity has risen, especially in multinational firms, though this has largely reflected capital deepening instead of improvements in efficiency.

Looking ahead, accelerating technological advances can facilitate the creation of new products and open up the markets for new types of equipment and skills. Broad technological diffusion that raises productivity will lead to lower retail prices, boosting aggregate demand. This has the potential to create an array of new jobs. Nevertheless, such advances may also be accompanied by some workers' skills becoming obsolete at a quickening pace, leaving them trapped in low-quality jobs or joblessness. The challenge is intensified by simultaneous population ageing, which potentially marginalises a large number of older workers unless well-designed reskilling programmes exist. To make the most of technological and demographic changes, it is a priority to further strengthen the adaptability of the labour market by providing continuous opportunities to develop, maintain and upgrade skills through learning and training at all ages.

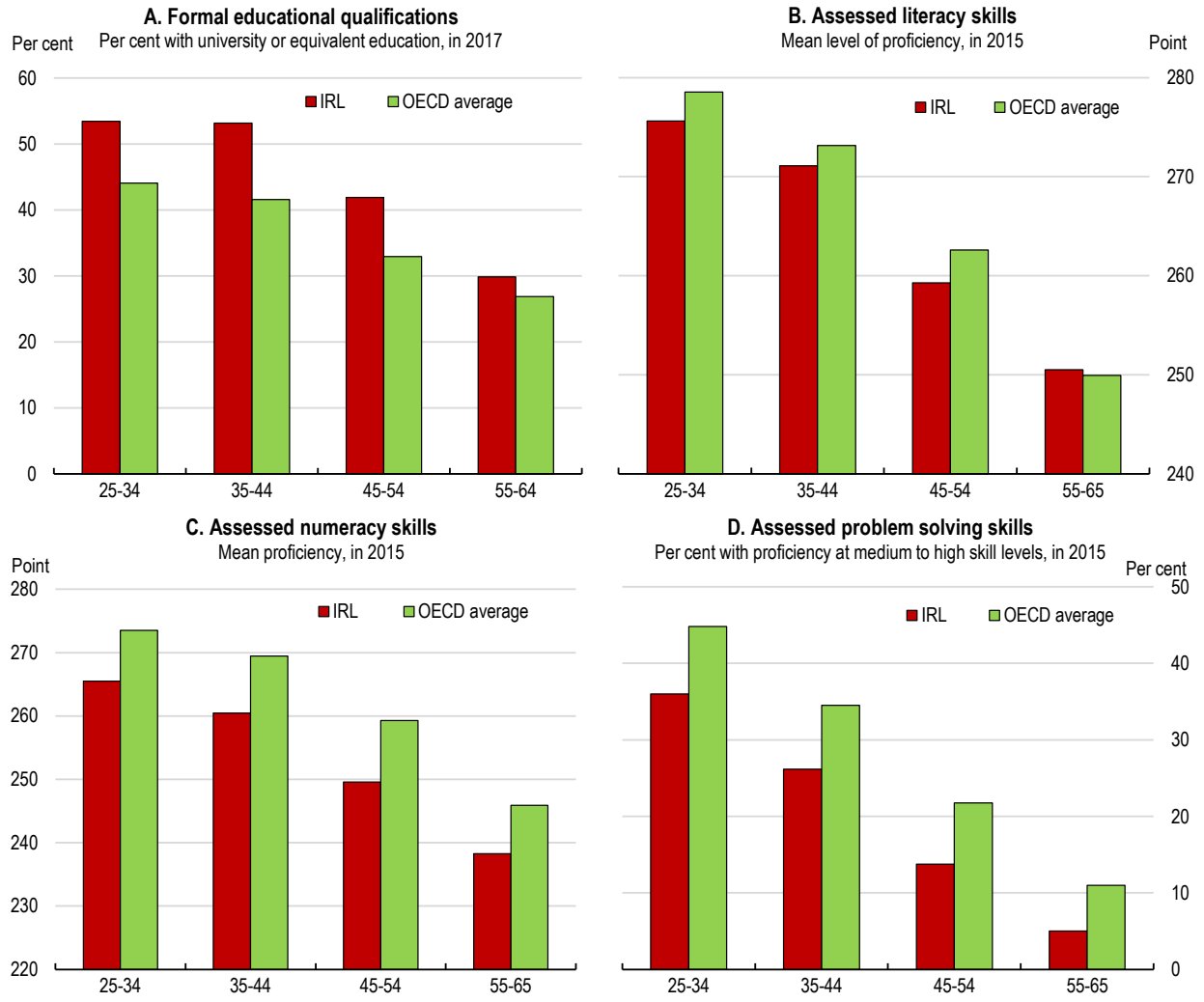
Upskilling or reskilling of workers is indeed becoming a serious challenge. Despite faster improvement of formal education qualifications, measures of the skills of Irish adults are below the OECD average. While the share of the population with university or equivalent level education was close to the OECD average for those aged between 55 and 64, it reached 53.5% for those aged between 25 and 34, well above the OECD average of 44.1% in 2017 (Figure 1.29, Panel A). Nevertheless, measured literacy skills of Irish adults remained close to the OECD average, and numeracy and problem-solving skills were significantly lower for all age cohorts (Figure 1.29, Panel B, C and D).

The sluggish growth of skill supply has contributed to skill shortages. In 2016, 29.5% of total jobs were being performed by underqualified workers, the highest in the OECD, and 14.6% by overqualified workers, below the 16.8% OECD average (Figure 1.30). According to a recent business survey, 76% of Irish firms

reported the lack of staff with the right skills as a major obstacle to investment, following uncertainty about the future, which was cited by 79% of them (European Investment Bank, 2019). As skills decline with age, developing an effective adult learning system is key for enabling individuals to keep their skills continuously updated to stay employed or to allow them to transition to new jobs (see Chapter 2). Financial arrangements for training programmes are particularly important for adult learning in Ireland. Public spending on training per participant, firms' investment in non-formal training as a share of gross value added and provision of employer-sponsored training are currently below the OECD average. Business contributions to the National Training Fund should be accompanied by a cost-reimbursement scheme that allows firms to claim back expenses for the training costs they incur, contingent on such training programmes being aligned with the identified skill priorities of the National Training Fund. Furthermore, the government should strive for a better mix of financial incentives for gaining new skills by considering measures including: i) a further shift of active labour market policies toward training, ii) the introduction of paid training leave and iii) the provision of preferential loans to individuals for training.

Figure 1.29. Skills of Irish adults have not improved as much as formal qualifications

By age



Source: OECD Educational Attainment dataset; OECD Survey of Adult Skills (PIAAC).

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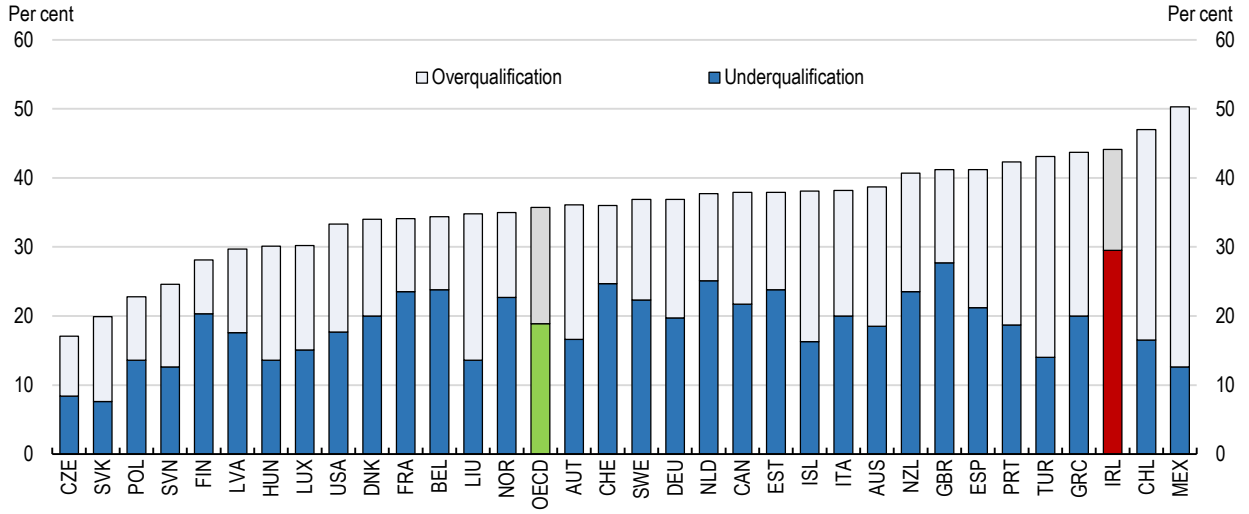
Figure 1.30. Skills mismatch stands out in Ireland due to skills shortages

Share of total employment, 2016



Source: OECD (2017), Getting Skills Right, OECD Skills for Jobs Indicators.

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The ageing population requires a well-functioning health system

Health outcomes have improved at high cost and with low satisfaction

Life expectancy in Ireland has increased more rapidly and is now higher than in the average OECD country. This is undoubtedly positive for the Irish population. To ensure that these extra years of life are lived in the best health possible, improvements to the functioning and financial sustainability of the health and long-term care systems should continue to be a focus. Doing so will promote both labour market participation and Irish living standards in the years ahead.

In 2017, 83.2% of Irish adults reported that their health conditions were "good" or "very good", the fifth highest in the OECD area. However, relatively good health outcomes have been sustained at a higher financial cost than in many other OECD countries. Health spending per capita was USD 4 915 in 2018, higher than the USD 3 992 OECD average, despite Ireland's comparably young population. The absence of universal coverage for primary care and a symbiotic relationship between public and private care systems mean that private expenditure plays a substantial role in system funding. Despite high health spending per capita, doctor consultations are less frequent and there is less hospital inpatient activity than the OECD average. While some of this may be related to the health status of the population and gaps in coverage, it also reflects capacity constraints: doctors and hospital beds per capita are below the OECD averages, with hospitals operating near full capacity (Table 1.10). These constraints are also reflected in lengthy waiting times for medical procedures, contributing to low patient satisfaction (Figure 1.31).

Table 1.10. Health services face severe capacity constraints

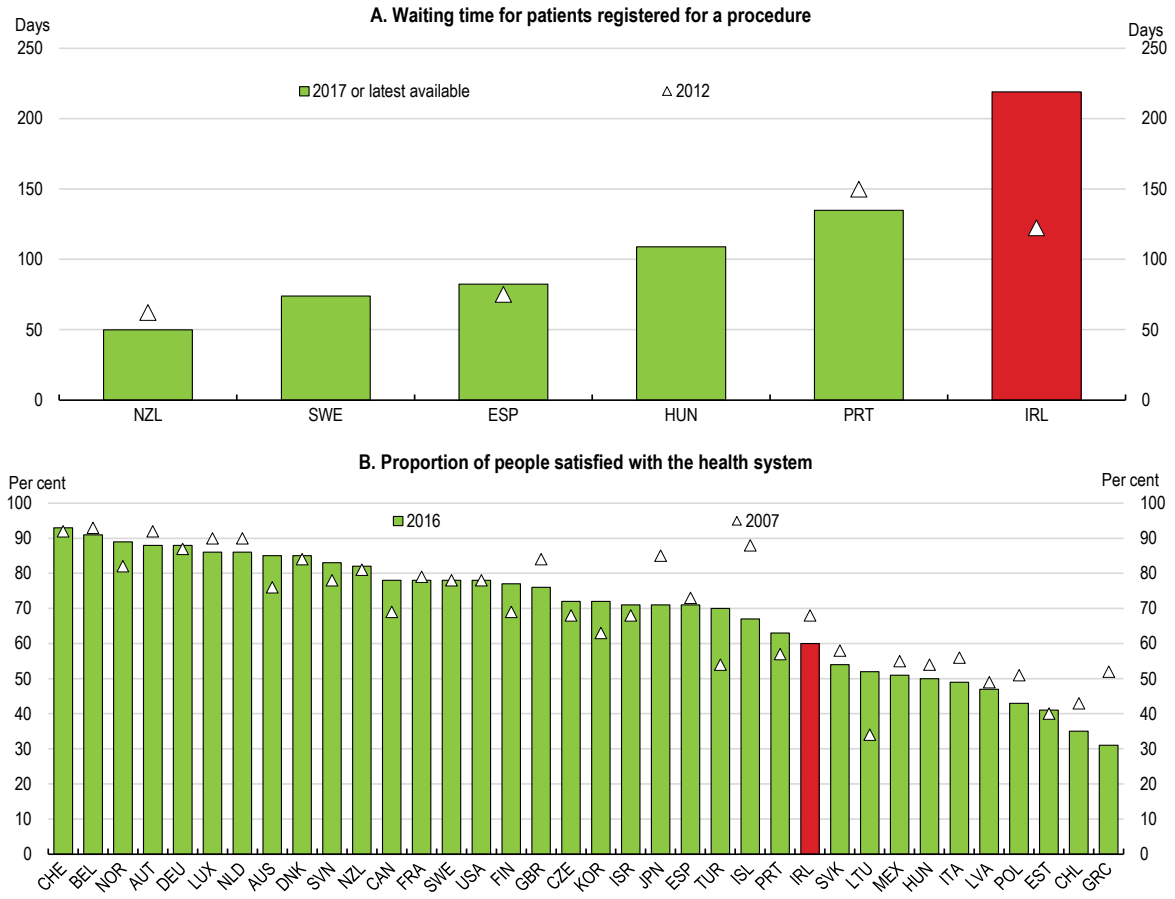
In 2018 or latest year available

	Total health expenditure per capita[1]	Share of private expenditure [2,3]	Number of doctor consultations per capita per year	Average hospital stay[4]	Occupancy rate of curative care in hospitals[3]	Number of practicing physicians[5]	Number of professionally active nurses[5]	Number of hospital beds[5]	Number of beds in long-term care facilities[6]
Ireland	**4 915.5**	**25.8**	**5.8**	**6.1**	**94.9**	**3.1**	**12.2**	**3.0**	**46.7**
OECD average	3 994.1	26.1	6.8	7.7	75.2	3.5	8.8	4.7	47.2
Highest country	10 586.1	48.5	16.6	18.5	94.9	6.1	17.7	13.1	81.9
Lowest country	1 138.0	14.5	2.8	3.7	61.6	1.9	2.1	1.4	1.8

1. In US dollars, current PPPs.
2. Sum of voluntary health care payment schemes and household out-of-pocket payments.
3. Per cent.
4. In days.
5. Per 1 000 population. Data for Ireland also include nurses working in the health sector as managers, educators, researchers, etc..
6. Per 1 000 population aged 65 and older.

Source: OECD, *OECD Health Statistics 2019*.

Figure 1.31. Satisfaction with the Irish health system declined as waiting times got markedly longer



Note: Panel A shows average waiting time across cataract surgery, coronary bypass, prostatectomy, hysterectomy, hip replacement and knee replacement. Data for New Zealand are as of 2016. Data for Hungary and Sweden for 2012 are not available.

Source: OECD, OECD Health Statistics 2019; OECD Government at a Glance 2017.

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Universal access to a comprehensive range of care is key to developing a more efficient health system

Ireland is the only Western European country that does not provide universal coverage for primary healthcare. Low-income residents or those with certain medical conditions are eligible for a Medical Card which provides free access to primary care and hospital services and medicines with limited co-payments. Some other population groups (10% of the population) have access to a GP Visit Card that covers general practitioner charges, but not the costs of medicines or hospital fees. However, more than half of the population pay out-of-pocket for a general practitioner visit (OECD and European Observatory on Health Systems and Policies, 2019). Gaps in public health coverage have resulted in high rates of private health insurance coverage (45% in 2017), which allows patients to bypass long waiting lists in the public system and gain faster access to hospital care and diagnostics (OECD and European Observatory on Health Systems and Policies, 2019). Medical consultants have an incentive to prioritise private patients, as they are often paid on a fee-for-service basis for private care, while being contracted to care for public patients on a salaried basis. The current system means that health costs can be prohibitively high for a group of the population with earnings that are below average but who are not eligible for free medical services. The prioritisation of private patients within the system raises serious equity concerns.

Limited access to primary care can lead to poor disease management, which exacerbates treatment costs and congestion of hospitals. Indeed, many hospitalisations in Ireland are avoidable, given the high hospital admission rate for chronic obstructive pulmonary disease and asthma, which could be effectively managed in primary care settings. The admission rate for these chronic conditions in 2015 was 329 per 10 000 population, among the highest in the OECD and the second highest in the EU. The GP contract in 2019 addressed this problem by including provisions for prime care chronic disease management. Nevertheless, primary care infrastructure is still under development.

In recognition of these challenges, a cross-party parliamentary committee published the *Sláintecare* report in 2017, which provided a roadmap to develop a patient-centred universal single-tier health and social care system over the next decade. Some of the key recommendations included: i) significant expansion of community and hospital care capacity; ii) universal access to a comprehensive range of health services at no or reduced cost; and iii) phased elimination of private care from public hospitals. It aims to shift care out of hospitals into primary and community settings, while envisaging waiting time guarantees of less than 12 weeks for an inpatient procedure, 10 weeks for an outpatient appointment and 10 days for a diagnostic test. The permanent increase of public spending to implement the reforms was estimated at €2.8 billion over ten years, which would be covered by a single national health fund based on general taxation with some earmarked funding. Besides the permanent increase, the *Sláintecare* Report recommended one-off spending of €3 billion to develop health infrastructure, digitalisation ("e-health") and expansion of training capacity for health professionals.

The authorities subsequently launched the *Sláintecare Implementation Strategy* in 2018, which set out a three-year implementation plan for some elements of the report and a ten-year strategic direction. The first three-year implementation strategy focused on improving the governance framework of the health system, preparing a masterplan for new models of care and setting up a transition fund. In April 2019, the authorities launched the *Sláintecare* Integration Fund with €20 million designated for 122 projects to develop local community and primary care systems. It has also committed to increasing the number of community care staff through the establishment of the *Sláintecare* Enhanced Community Fund, which was allocated €10 million in Budget 2020. Nevertheless, further strengthening primary and long-term care is rightly identified as a priority. It is projected that demand for home help and for places in residential care homes will increase by more than 50% by 2030 (Wren et al., 2017). Already, Ireland is experiencing a high rate of unmet needs for home care relative to other comparable European countries (Privalko et al. 2019).

While the *Sláintecare* implementation plan is an essential first step, the upcoming implementation strategy should ensure that the reform will be implemented without delay, by articulating a sequence of changes

that put the new system in operation and lay out concrete measures to finance the additional spending. Given the sizeable permanent increase of public spending that will be required, the plan should be accompanied by a deliberate increase of stable tax revenue sources, such as the VAT, as well as new measures to enhance spending efficiency (see above).

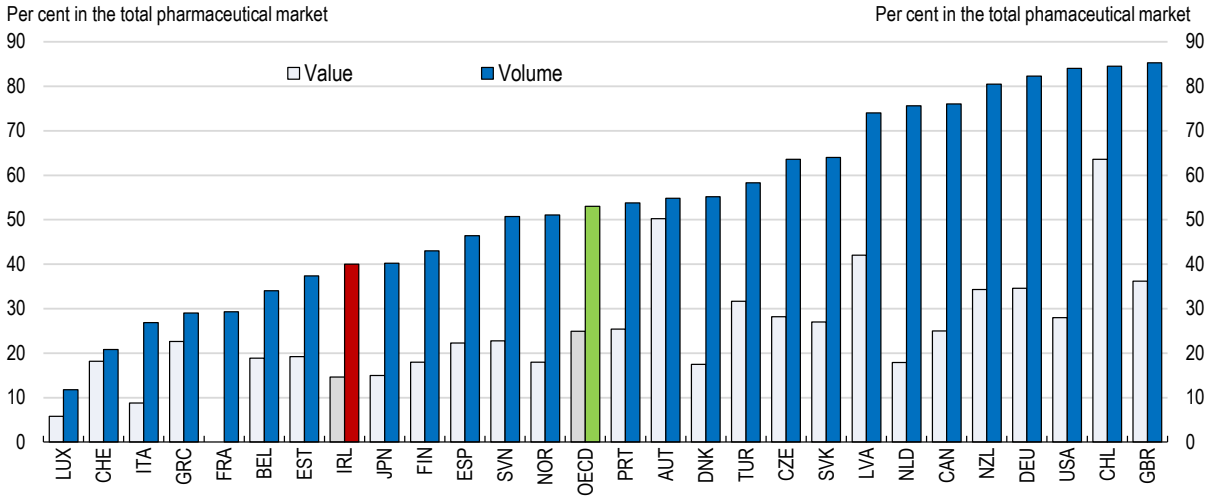
There remains ample scope for containing pharmaceutical spending

Pharmaceutical spending accounts for a substantial part of healthcare costs in Ireland. In 2017, pharmaceutical spending per capita was USD 599, higher than the USD 564 OECD average. Greater use of generic drugs is key to contain pharmaceutical costs. The Health (Pricing and Supply of Medical Goods) Act 2013 introduced reference prices, which sets a common reimbursement price for a group of interchangeable drugs. Following the legislation, the share of generic drugs in the pharmaceutical market rose from 29% to 40% in volume terms by 2017.

Even so, the share of generic drugs remains much lower than in many other OECD countries (Figure 1.32). Facilitating competition in the off-patent drug market would boost penetration of generics and further cost savings. In particular, the re-reference periods for many drugs spans several years in Ireland, contrary to the standard practice of biannual reviews in many other EU countries. Infrequent reviews on reference prices can lead to overly high reimbursement rates if there has been a reduction in the market price of a pharmaceutical product. The lowest price in the group of interchangeable drugs should be identified through more frequent reviews, like in the Netherlands, and serve as a benchmark for the maximum reimbursement rate, taking into account, however, the need to ensure continuity of supply (Connors, 2017). In addition, the time span of initial reference pricing following patent expiration should be shortened. Policies related to pharmaceutical prescription should also promote generic uptake. Measures taken by other EU countries should be considered, including: *i)* incentives for doctors to prescribe generics through a pay-for-performance scheme; *ii)* prescription quotas for generics; and *iii)* mandatory prescription by non-proprietary names (i.e. ensuring that doctors prescribe by medical ingredients and not by brand names; OECD, 2018c).

Figure 1.32. The use of generic drugs is low in Ireland

Share of generics in 2018 or latest year available



Note: Data include sales of medical non-durables. Reimbursed pharmaceutical markets are referred to for the United Kingdom, Germany, New Zealand, Austria, Spain, Ireland, Belgium, Greece and Luxemburg, while community pharmacy markets are referred to for Chile, the United States, Denmark, Slovenia, and Estonia. Data in value terms are not available for France.
Source: OECD, OECD Health Statistics 2019.

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Combating corruption to enhance trust in economic transactions

Fighting corruption is important to prevent distortions in competition and the misallocation of resources, while fostering trust in economic transactions. The *2018 OECD Economic Survey of Ireland* highlighted that, abstracting from the activities of multinational enterprises, the efficiency of resource allocation in Ireland is relatively low. Poor resource allocation reduces aggregate productivity growth and hampers the capacity of the economy to accommodate the new demands of a growing population.

Indicators of control and perceived risks of corruption suggest that Ireland ranks in the middle of the OECD but performs poorly compared with many Northern European OECD countries and small open OECD economies such as Canada and New Zealand (Figure 1.33, Panel A, B and C). Empirical evidence shows that companies from countries that are a party to the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions reduce investments in corrupt destinations (Blundell-Wignall and Roulet, 2017). Catching up to the best-performing small open OECD economies in control of corruption could have a positive impact on the Irish economy, including through maintaining Ireland's attractiveness as a destination for foreign direct investment.

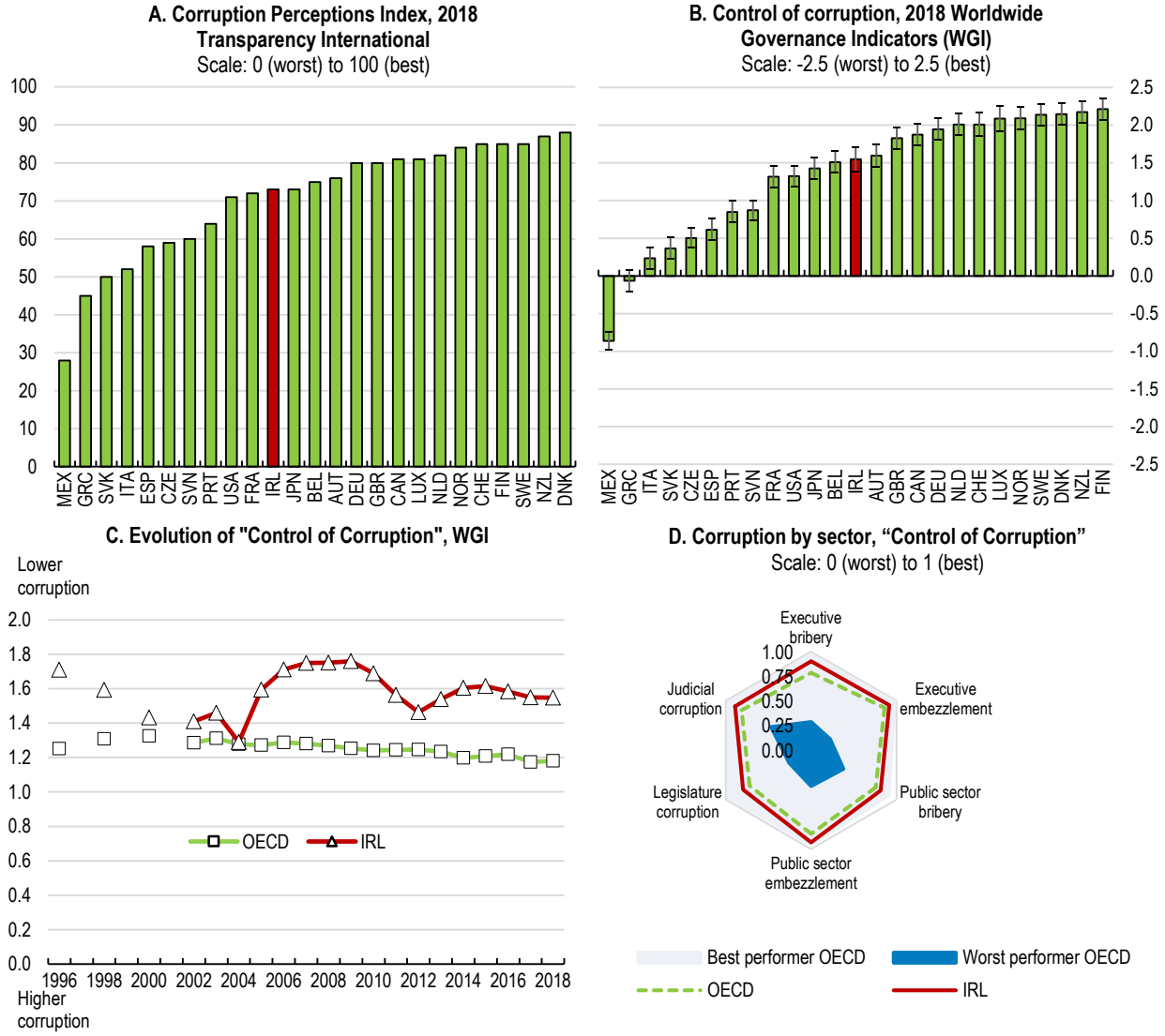
According to a survey by the European Commission, 68% of Irish citizens think that corruption is widespread, in line with the EU average (European Commission, 2017b). The survey also shows that 70% of Irish citizens think high-level corruption cases are not adequately pursued, which is also around the EU average. Although 89% of firms do not consider corruption to be a problem when doing business, the majority of them think that those who engage in corrupt practices are unlikely to be caught, charged, and heavily fined or imprisoned (European Commission, 2019b). Indeed, the anti-money-laundering regime exhibits weaknesses in enforcement of the law through investigation, prosecution and confiscation (Figure 1.34, Panel B). In recent years, Ireland has made progress in compliance with the recommendations of the Financial Action Task Force (Financial Action Task Force, 2019). The impact of these changes on the performance of the regime will be assessed in 2022.

Ireland has implemented several reforms following the 2017 White Collar Crime Package. These include the Criminal Justice (Corruption Offences) Act 2018, which consolidated and overhauled seven pieces of corruption-related legislation and introduced a number of new offences. In tandem, the Anti-Corruption Unit of the national police force (Garda Síochána) was established in 2017. While these strengthened the anti-corruption regime, further efforts should be made to effectively enforce the new law. For example, Ireland should take necessary steps to ensure that all relevant legal entities including unincorporated bodies such as branch companies and limited partnerships, which are not considered as legal persons under the 2018 Act, are liabile for the criminal offences (OECD, 2019d). In addition, there is scope to increase the resources allocated to the Garda Anti-Corruption Unit and for its corruption prevention mandate to be clarified. Furthermore, setting up an inter-agency body would help clarify role-sharing of relevant agencies and facilitate coordination of their corruption prevention efforts (United Nations, 2019).

Corporate governance should also be aligned with the strengthened anti-corruption regime. A survey showed that 40% of Irish corporate executives and board members have limited or no working knowledge of bribery and corruption legislation, while only 18% see bribery and corruption as a key risk to their business (Deloitte, 2019). Ireland should update codes of conduct for a range of businesses and relevant professionals to promote development of effective internal control systems. In addition, an amendment to the whistleblower law in 2018 does not provide protection for whistleblowers who report corruption using trade secrets unless they prove that their disclosure was motivated by a general public concern. While the amendment was in response to the EU directive on the protection of trade secrets, Ireland is the only country that changed whistleblowing legislation in this way (Dell and McDevitt, 2018). The effect of the amendment should be closely monitored and adjusted if the heightened onus of proof is found to hamper whistleblowing.

Ireland should also step up efforts to tackle bribery by Irish companies and individuals in their foreign activities and by foreign companies operating in Ireland by strengthening the implementation of the OECD Anti-Bribery Convention. Ireland is considered to have particularly weak enforcement of the OECD Convention (Dell and McDevitt, 2018). International legal cooperation is indispensable for effectively controlling corruption related to foreign activities. In Ireland, mutual legal assistance is regulated by the Criminal Justice (Mutual Assistance) Act 2008, which is applicable to EU members and other States designated under the Act. The Act provides a basis for cooperation under a number of EU, Council of Europe and UN instruments. Cooperation with other countries requires designation of the countries under the Act. For example, while confiscation orders from EU countries are directly enforceable under the law, the government has discretion for those from other countries as to whether to make an application to the court (United Nations, 2019). Ireland should continue to extend mutual legal assistance with non-EU countries through designations under the law as well as treaties.

Figure 1.33. Ireland ranks in the middle of the OECD in terms of perceived risks of corruption



Note: Panel B shows the point estimate and the margin of error. Panel D shows sector-based subcomponents of the "Control of Corruption" indicator by the Varieties of Democracy Project.

Source: World Bank; Transparency International; Varieties of Democracy Institute; University of Gothenburg, and University of Notre Dame.

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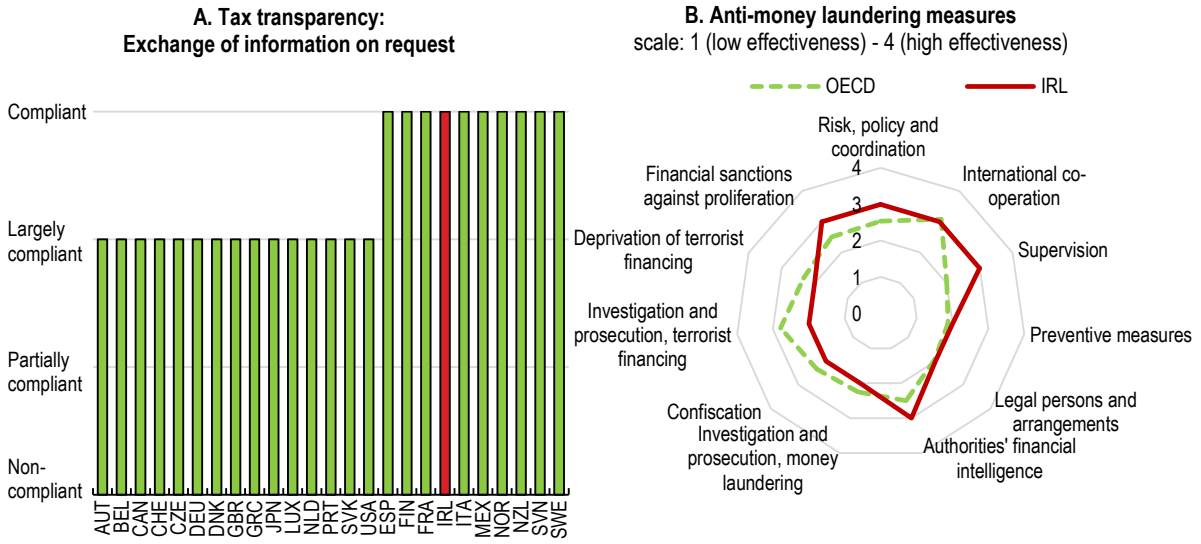
Figure 1.34. There is scope to strengthen enforcement of Irish anti-corruption laws



Note: Panel A summarises the overall assessment on the exchange of information in practice from peer reviews by the Global Forum on Transparency and Exchange of Information for Tax Purposes. Peer reviews assess member jurisdictions' ability to ensure the transparency of their legal entities and arrangements and to co-operate with other tax administrations in accordance with the internationally agreed standard. The figure shows first round results; a second round is ongoing. Panel B shows ratings from the FATF peer reviews of each member to assess levels of implementation of the FATF Recommendations. The ratings reflect the extent to which a country's measures are effective against 11 immediate outcomes.
Source: OECD Secretariat's own calculation based on the materials from the Global Forum on Transparency and Exchange of Information for Tax Purposes, OECD, and Financial Action Task Force (FATF).

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Further promoting environmentally sustainable growth

The expected growth in the Irish population will also put strains on the environment, unless the activities of the population adjust to use resources in a more efficient and environmentally-sustainable way. Some of these impacts may be local in nature, such as through the impact on air and water pollution, while others, including the emissions from greenhouse gas emissions, will have more global consequences. The Irish government has been targeting an 80% reduction in emissions of carbon dioxide in three key sectors (electricity generation, the built environment and transport) by 2050 relative to 1990 levels. However, it has also supported a more ambitious proposal at the EU level to target net zero emissions by 2050. In addition, in the agriculture, land use and forestry sectors, the aim has been to progress towards carbon neutrality without compromising sustainable food production.

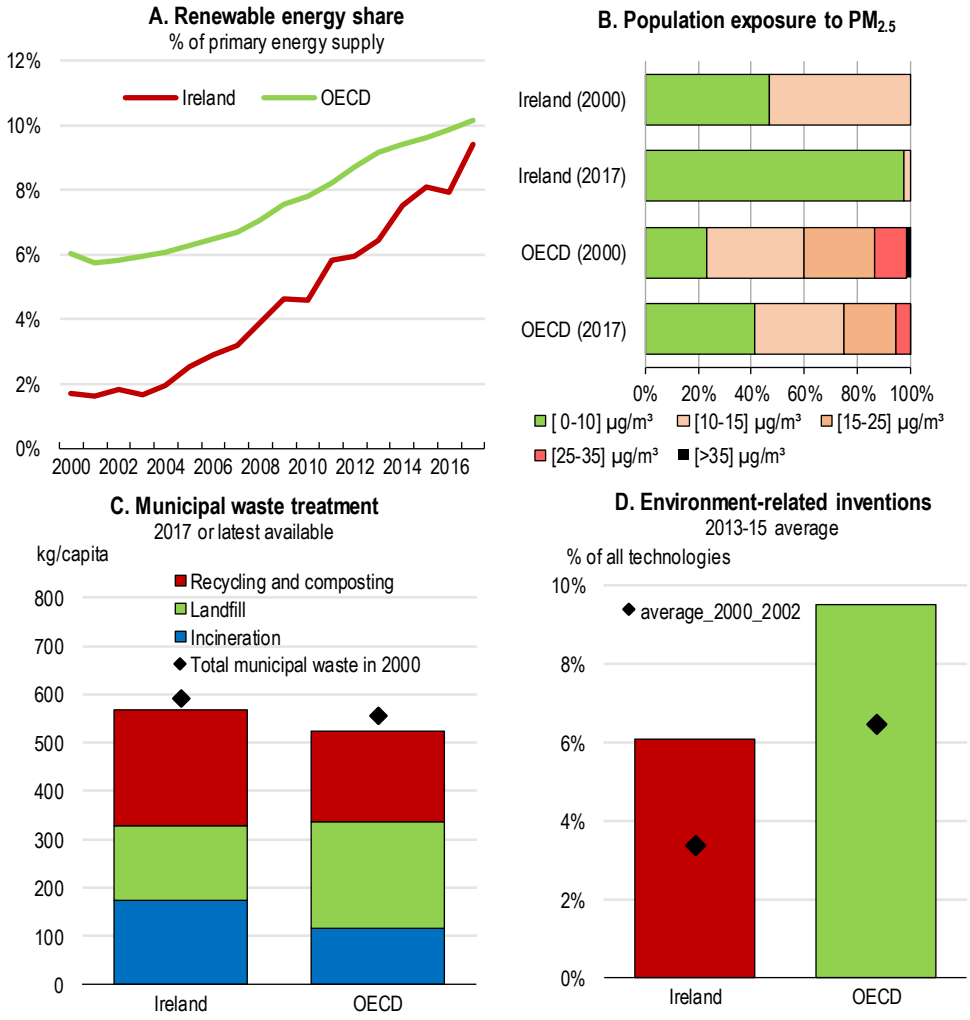
Ireland has made progress in decoupling energy-related CO_2 emissions from GDP over the past 15 years. Declining energy intensity and rising renewable energy production have contributed (Figure 1.35, Panel A). Nonetheless, non-CO_2 greenhouse gas (GHG) emissions, mostly in agriculture, account for a third of total emissions and have been rising. Overall GHG emissions are 11% lower than in 2005 but have increased in recent years, notably in transport. Most Irish GHG emissions are not covered by the European Union's emissions trading schemes, making national mitigation policies particularly important.

On current policies, Ireland will miss its target to reduce emissions outside the emissions trading schemes by 20% between 2005 and 2020 (Climate Change Advisory Council, 2019). It will also miss the 2030 target (a 30% decline from 2005 levels) by a wide margin. Ireland can purchase emissions allowances within the EU to make up for the shortfall. However, this would cost taxpayer money while only deferring abatement effort. Moreover deferring abatement effort risks raising costs, as long-lived infrastructure investment that is consistent with decarbonisation needs to be deployed as soon as possible. As argued by Ireland's

Climate Change Advisory Council (2019), overachieving the 2030 target would be appropriate to reach the 80% GHG emission reduction target by 2050 at lower cost.

The Irish government's Climate Action Plan proposes sectoral emission targets as well as steps to reach the 2030 emissions target and prepare for net-zero emissions in 2050. It includes a stronger climate policy governance framework with an independent Climate Action Council which would propose five-year carbon budgets and monitor the actions to reach them. A similar framework has helped the United Kingdom sharply reduce emissions in electricity generation (OECD, 2019e). The Action Plan now needs to be followed by the continued implementation of steps to achieve emission reductions. As discussed earlier, there is a need for higher environmental levies to deter damaging activities. More ambitious policy to price emissions would also boost eco-innovation, which is weak (Figure 1.35, Panel D).

Figure 1.35. Renewable energy use has risen



Source: OECD Green Growth Indicators database.

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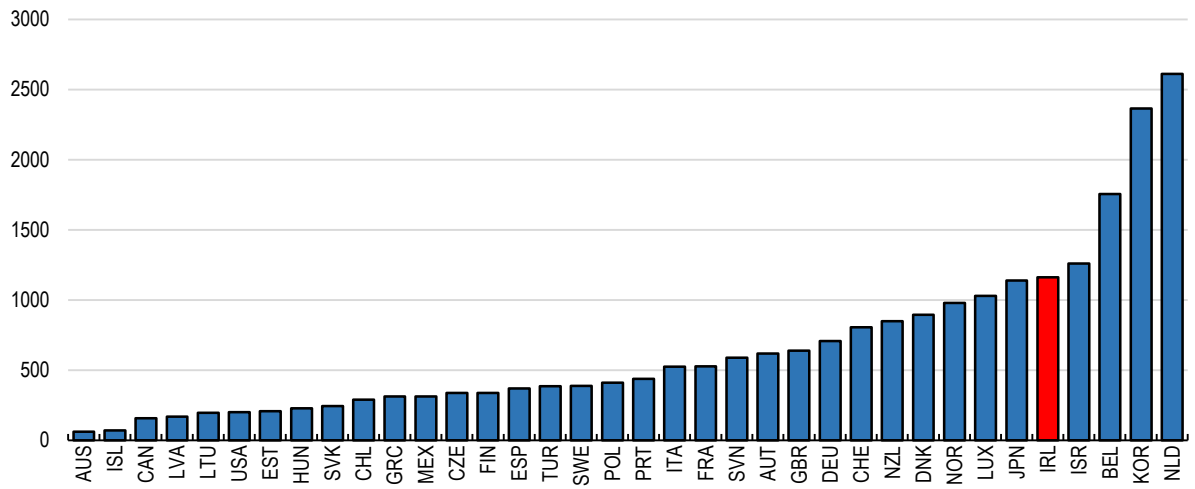
The agricultural sector is the largest single contributor to Ireland's greenhouse gas emissions. This is a reflection of the relative size of the sector within the Irish economy, particularly intensive livestock production (Figure 1.36). Emissions in agriculture, mostly related to cattle, are not priced (Climate Change

Advisory Council, 2019). Ireland could consider following New Zealand's approach to pricing such emissions, which involves close consultation with farmers. In the New Zealand case, it is planned that biological emissions (i.e. those from methane and nitrous oxide) from agricultural activity will be included in the emissions trading scheme if insufficient progress in reducing emissions is made on a voluntary basis. Ireland should pursue full and early implementation of cost effective measures for abatement of agricultural emissions, taking into account the full costs and benefits (both private and public) of implementation. The mitigation measures outlined in its agricultural "Marginal Abatement Cost Curve" (Teagasc, 2018) should be a priority. These include afforestation, improvements in agricultural production efficiency, grassland and other soil management, as well as changes in fertilisation, energy efficiency and biomass use. If fully implemented, estimates suggest that these measures will reduce or absorb the equivalent of 37% of 2005 agricultural emissions by 2030.

Figure 1.36. Livestock production is relatively intensive



Note: Conversion coefficients used to convert livestock heads in sheep equivalent: 1 for sheep and goats, 6 for cattle and buffaloes, 4.8 for equines,1 for pigs, and 0.06 for poultry birds.
Source: *OECD Agricultural Statistics* database; *FAOSTAT* database.

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Diversified uses of land can have both local and global environmental benefits, improving biodiversity, water quality, leisure, tourism services, as well as resilience to climate change (Climate Change Advisory Council, 2019). Upscaling afforestation should be prioritised in the near term to allow the full carbon storage potential of trees to be realised by 2050. It is not clear whether it is possible to achieve Ireland's afforestation targets (22 million trees planted each year to 2040), particularly in the context of current government support for different land uses (including for agriculture) and the social factors which prevent the wider uptake of forestry. Public support to producers and the relative competitiveness of Irish dairy farming increases the value of farmland and thereby the cost of mitigation through diversified land use. Nonetheless, Ireland could reconsider the balance of support for different land uses to ensure it is supporting stated forestry and climate policy goals, notably by placing a greater emphasis on increasing the provision of environmental services such as carbon sequestration and prioritising measures that support water quality. The *2018 OECD Ireland Economic Survey* highlighted many of the challenges for the latter, not least the need to continue investing in modern water infrastructure.

Further reductions in the emissions intensity of Irish buildings should also be pursued. Policies to lower energy demand are key, including those that encourage investment in energy efficiency improvements. The average Irish dwelling emits almost 60% more CO_2 than the average EU dwelling (Sustainable Energy

Authority of Ireland, 2018), partly because Ireland has a relatively high share of fossil fuels in residential heating (IEA, 2019). While the CO_2 intensity of residential energy declined steadily between 1992 and 2013, there has been little progress since (Sustainable Energy Authority of Ireland, 2018).

The authorities have introduced regulations requiring all new buildings to install renewable energy systems and to become "nearly zero energy buildings". Furthermore, homeowners carrying out major renovations or extensions are now required to ensure the entire dwelling meets a higher energy rating than was previously the case. Financial support for the installation of new oil or gas boilers has also been discontinued to avoid possible lock-in of high-carbon heating systems and local authorities are undertaking a programme of insulation retrofitting for the least energy efficient social homes.

As in most OECD countries, the rental sector poses an ongoing challenge for further reducing emissions from dwellings due to the weaker incentives of owners to make investments in heating efficiency. The authorities have introduced an exemption to the 4% restriction on rent increases in Rent Pressure Zones (identified areas that have experienced high and rising rents) if a landlord improves the energy rating of their property by at least seven building energy ratings. An ongoing action under Ireland's Climate Action Plan is further encouraging improvements in energy efficiency in the rental sector. As recommended by the International Energy Agency, the government should consider introducing minimum energy efficiency standards for existing rental dwellings to encourage renovations that both improve energy efficiency and make more use of renewable energy (IEA, 2019). Such a policy should specify a timeline for the minimum standards to be achieved that is consistent with the emission reduction path proposed by the authorities. Public funding should prioritise low-income households in poor quality housing with low energy performance. Such investments can provide large benefits, in addition to those from emission reductions, in terms of reduced indoor and outdoor air pollution, lower energy poverty and better indoor ambient temperature (OECD, 2019f). In New Zealand, the health benefits alone were found to make such investments in energy efficiency worthwhile (Grimes et al., 2012). Standards are also key for building equipment and appliances, such as for the installation of electric heat pumps, which could also make energy demand more flexible in response to intermittent electricity supply.

MAIN FINDINGS	RECOMMENDATIONS (key recommendations in bold)
Raising fiscal sustainability	
With robust underlying economic activity and emerging capacity constraints, fiscal policy has been too loose in recent years. Windfall corporate tax receipts have been partly used to fund within-year cost overruns.	**Fiscal policy should be tightened somewhat in the event of an orderly Brexit.** **Use windfall corporate tax revenues to pay down general government debt or to further build up the Rainy Day Fund.** Delink the Christmas bonuses of welfare recipients from revenue outturns and systematically include these amounts in government budget plans.
Ireland's upwardly distorted GDP, which relates to the activities of multinational enterprises, contributes to an overly benign assessment of the fiscal position when judged against the fiscal rules of the EU *Stability and Growth Pact*.	**Create domestic fiscal rules based on measured modified gross national income (GNI*) and an estimate of potential output growth that is tailored to the Irish context.** **Set medium-term government debt targets as a share of GNI*.**
Ireland relies less than other countries on more efficient tax sources, such as consumption taxes and recurrent taxes on immovable property. The local property tax is currently levied on 2013 market values.	**Streamline the Value Added Tax system, moving from five rates to three.** **Reassess property values more regularly for the purposes of calculating local property tax. At the same time, protect those low-income households adversely impacted.**
The population is expected to age rapidly over the coming decades. Ireland is the only Western European country that does not have universal coverage for primary healthcare. A two-tier system exists whereby those with the ability to pay for treatment privately get faster access to care in public and private hospitals. A lack of capacity in both primary and secondary care contributes to long waiting times for treatment.	**Implement the main proposals of the Sláintecare report, establishing a single-tiered health service that provides universal access to primary care.**
The health sector has seen repeated expenditure overruns since 2015. Key legislative requirements are not being met related to the National Service Plan, which is the main tool for budget planning used by the Health Service Executive.	**Ensure that all legislative requirements for the National Service Plan are fulfilled by the Health Service Executive.**
The state pension benefit is determined in a discretionary manner and has followed a heavily pro-cyclical pattern in recent years. Pension spending is expected to grow rapidly over coming decades.	Index future increases in the state pension benefit to inflation. Implement the planned increase in the state pension age to 68 by 2027 and link changes to life expectancy thereafter.
Maintaining financial stability	
The non-performing loan ratio in the banking sector has declined notably. Nevertheless, it remains elevated relative to European peers. Furthermore, many of the remaining non-performing loans will be difficult to cure, partly due to slow repossession proceedings.	**Consider granting lenders a collateral possession order for a future date.** Raise provisioning requirements for non-performing loans, including by implementing new European Union regulations related to provisioning.
Macroprudential policy settings have helped ensure that the conditions for another boom-bust housing cycle do not take root. Nevertheless, there is scope to expand the macroprudential toolkit to further safeguard the financial system against emerging risks.	Introduce a systemic risk buffer to boost banks' capital in order to further safeguard financial stability.
Only around one-third of fintech firms are regulated by the Central Bank of Ireland. Other fintech firms have no reporting obligations.	**Ensure regulators have the power to obtain relevant information from unregulated financial service providers.**
Better protecting the natural environment	
Environment-related taxation remains low and Ireland will not achieve its carbon emission targets by 2020 or 2030. However, an increase in the carbon tax will be regressive.	**Gradually raise the carbon tax rate according to a schedule that is well communicated to households and businesses; use some of the revenues to fund new green investment and measures that offset any adverse distributional effects.**
The external costs of individual motor vehicle use, including air pollution and congestion, exceed vehicle and fuel tax levels, especially in urban contexts. Dublin roads are some of the most congested in the world.	Continue to invest in public transport, and consider further promoting digital-based ride sharing and the introduction of congestion charging.
CO_2 emissions from Irish dwellings are relatively high, partly due to the high share of fossil fuels in residential heating.	Consider introducing minimum energy efficiency standards for existing dwellings used for rental.
The agriculture sector is the largest single contributor to Ireland's greenhouse gas emissions.	**Pursue full and early implementation of cost effective measures for the abatement of carbon emissions from agriculture, particularly those related to afforestation.**
Promoting technological diffusion and managing the associated policy challenges	
Promoting greater business dynamism is key to encouraging the uptake of new technologies. Regulatory burdens on start-ups are relatively onerous in Ireland, due to complex regulatory procedures and the system for licenses and permissions.	**Monitor business licensing requirements and the systems that facilitate them, including by linking more licensing procedures with the Integrated License Application Service.**
Participation in lifelong learning by adults is low.	**Enhance financial assistance for training programmes for young**

	workers. More actively establish and promote distance learning programmes. **Couple adequate public financial support for childcare with measures to expand childcare capacity.**
Gaps in the coverage of social protection and labour market regulations between dependent employees and self-employed workers can distort choices around the form of employment, erode the social protection base and undermine the bargaining position of platform workers.	**Require those freelance platform workers who are effectively dependent employees to pay a Pay-Related Social Insurance premium equivalent to that paid by dependent employees and introduce an employer contribution.** Prioritise implementation of the EU Directive 2019/1152 to extend the coverage of minimum standards for workers and cost-free training to all forms of dependent employment.
Unique features of digital markets, including substantial network effects, may be negatively impacting competitive dynamics.	**Give the Irish Competition and Consumer Protection Commission adequate enforcement powers to fight anti-competitive behaviour, including the capacity to impose sufficient penalties on competition law infringements to ensure a deterrent effect.**
Ireland performs poorly in control and perceived risks of corruption compared with most other high-income OECD countries.	Ensure effective enforcement of the new anti-corruption laws, through strengthening the anti-corruption unit of the national police force, setting up an inter-agency body to coordinate corruption prevention efforts of relevant agencies, and updating codes of conduct for businesses and relevant professionals. Strengthen implementation of the OECD Anti-Bribery Convention by continuing to enhance international cooperation in law enforcement and legal assistance activities, notably with non-EU parties.

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Annex 1. Progress on structural reform

This Annex reviews action taken on recommendations from the March 2018 *Survey* that are not reported elsewhere in this *Survey.*

Recommendations in the previous *Survey*	Actions taken since March 2018
Productivity	
Reduce the price of construction permits and registration of property charged by the relevant authorities.	No specific action taken.
Permit the introduction of new forms of legal businesses.	In 2019, regulations were finalised that allowed the establishment of legal partnerships and of limited liability partnerships.
Replace local business tax with a broad-based land tax.	No specific action taken.
Introduce guidelines for banks that specify circumstances under which personal guarantees from businesses should not be sought.	No specific action taken.
Further develop alternative financing platforms for young businesses.	In November 2018, the size of the European Angels Fund Ireland was doubled to €40 million.
Increase the use of direct public support for business research and development such as grants, loans and loan guarantees.	The Department of Business, Enterprise and Innovation has now undertaken two calls for funding applications under the Disruptive Technologies Innovation Fund. As of December 2019, 43 collaborative projects had been awarded almost €140 million in Exchequer funding. Each collaboration project included at least one small and medium-sized enterprise.
Reduce the administrative burden to obtain permits and licences for start-ups by fully developing the new on-line Integrated Licence Application Service.	In July 2018 the Department of Business, Enterprise and Innovation signed a services contract for bringing a number of its licence application processes online via Licences.ie.
Develop the out-of-court debt resolution mechanisms, making it easier for the debtor and creditor to reach agreements by reducing stringent requirements.	No specific action taken.
Consider reforming the Employment and Investment Incentive Scheme, a tax relief for equity investors, to support the transition of innovative firms into the public stock exchange.	No specific action taken.
Scale up the Microenterprise Loan Fund Scheme so that public financial support reaches firms in early stages and in a wide range of sectors.	No specific action taken.
Focus the Credit Guarantee Scheme on overcoming market failures that young firms typically face rather than supporting mature firms.	The revised SME Credit Guarantee Scheme was launched in June 2018. Amended legislation included new types of products under the scheme such as invoice discounting and factoring.
Raise the participation of local firms in the supply chains of foreign-owned enterprises by giving Local Enterprise Offices a more active role in identifying potential supply linkages.	No specific action taken.
Inclusive growth	
Move towards providing universal access to health and social services and incentivise patients to access care outside of hospitals.	There has been continued investment in Primary Care Centres. As at end-2019, there were 129 operational care centres across the country, an increase of 18 compared to March 2018.

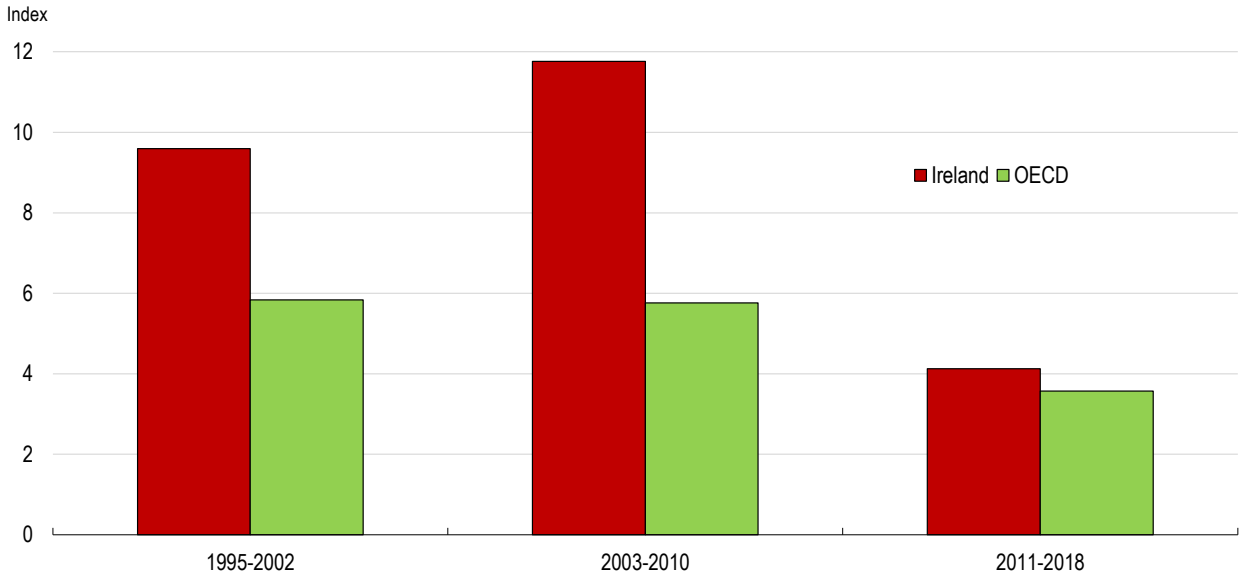
2 Technological diffusion and managing the associated economic transitions

Technological change is transforming Ireland's economic structures, leading to new jobs and innovative products that benefit consumers. Adoption of new technologies by businesses has been high relative to many other OECD economies, but it has been uneven across industries and the impact on productivity growth in most firms has been modest so far. Policymakers must encourage further diffusion of new technologies through reforms that promote business dynamism, at the same time as supporting the accumulation of skills that help the productivity potential of such technologies be realised. Some workers who are displaced by technological change must be assisted in transitioning to new, higher productivity jobs through well-designed activation and training programmes. New jobs in the gig economy and changes in the geographic location of economic activity should also be accommodated, thereby adding to the flexibility of the Irish economy. Nevertheless, as technological progress causes business models and market structures to mutate, competition policies and data security measures will need to be revisited.

Structural economic change has been a persistent feature of Ireland's past three decades, more so than in most OECD countries (Figure 2.1). The ability of the economy to adapt to new demographic, economic and technological trends has been evidenced by its impressive performance: since the mid-1990s, the average real wage has increased by over 50% in Ireland, compared with around 30% in the United States or the average OECD country.

Figure 2.1. The economy has been through significant structural change

Index of structural change



Note: The Lilien Index is used to examine the extent of structural change (Lilien, 1982). The index measures employment dispersion by taking a weighted standard deviation of sectoral employment growth relative to aggregate employment growth over the given time horizon. The OECD aggregate is an average across 24 OECD countries for which comparable data are available.
Source: OECD.

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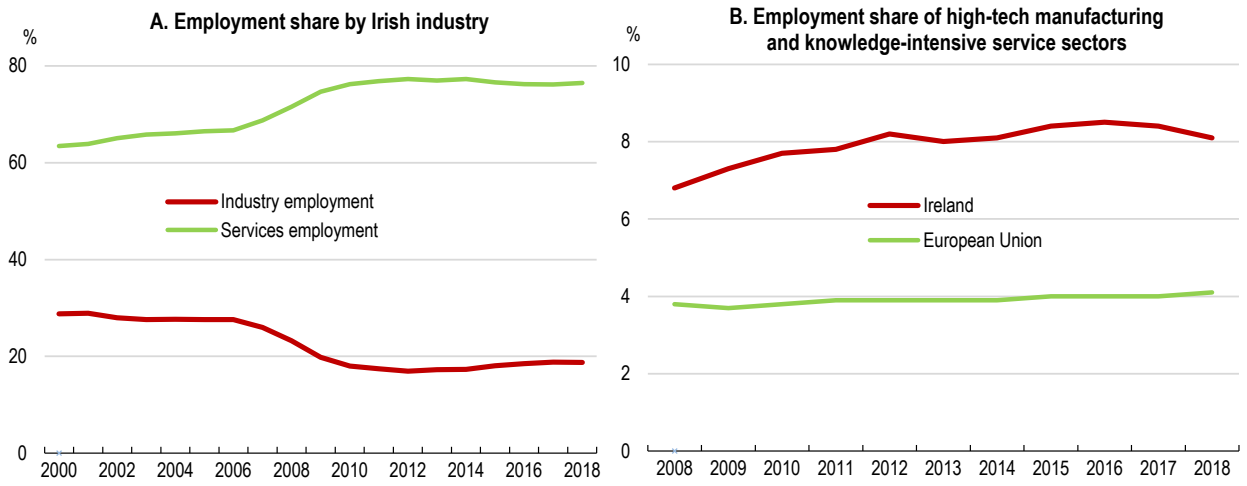
The share of employment in the services sector has increased markedly over the past decade (Figure 2.2, Panel A), reflecting the contraction of the construction industry following the 2008-13 property market downturn and the continued trend decline in manufacturing. At the same time, the technological intensity of the economy has been rising steadily: the employment share of knowledge-intensive services and high-tech manufacturing has increased and dwarfs the European Union average (Figure 2.2, Panel B). Ireland now has the highest proportion of high-tech goods exports of any European economy. These changes have contributed to modify the geographic distribution of economic activity, with Dublin experiencing much faster growth than many other parts of Ireland since 2010 (Figure 2.3).

Figure 2.2. Services and knowledge-intensive sectors have gained prominence



Source: Eurostat, OECD Annual Labour Force Statistics database.

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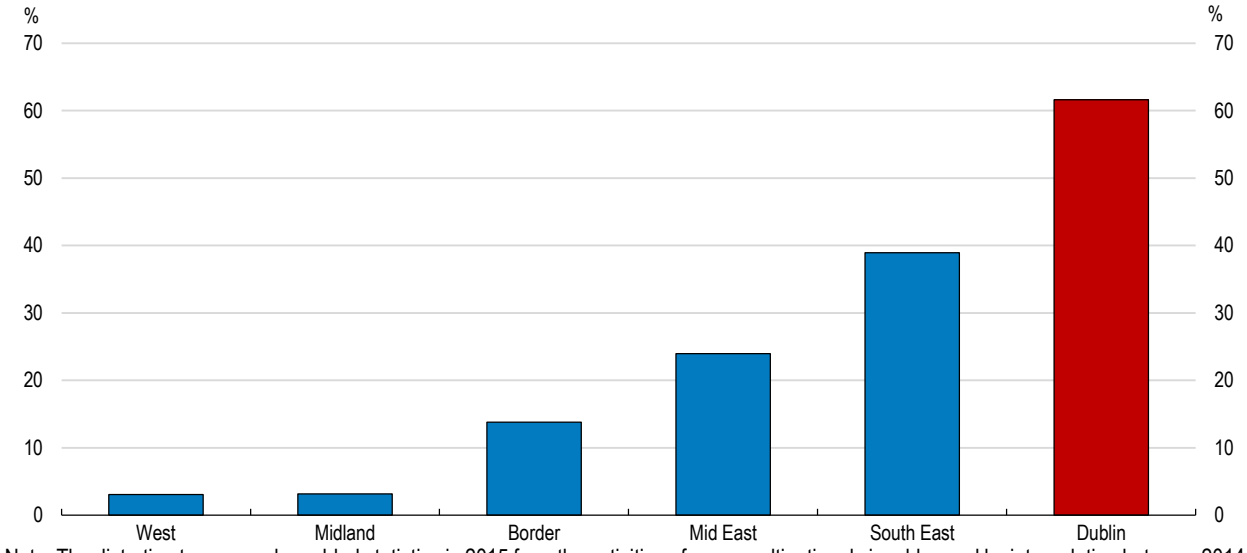
Figure 2.3. Dublin has experienced particularly fast economic growth

Percentage change in estimated gross value added, 2010-17



Note: The distortion to gross value added statistics in 2015 from the activities of some multinationals is addressed by interpolating between 2014 and 2016 based on the historical relationship between regional employment data and regional gross value added.
Source: Central Statistics Office, OECD calculations.

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These trends have coincided with increased technological diffusion in many parts of the Irish economy. The recent *OECD Going Digital Project* highlighted how digital technologies, in particular, are growing in their importance (OECD, 2019a). Technological progress is at the forefront of economic development and is overwhelmingly positive for aggregate social welfare. New technologies are transforming existing structures, influencing the way that producers create and interact with one another and with customers. Novel areas of economic activity are opening up thanks to the emergence of technologies, creating jobs. There are also benefits to consumers, with technological advances providing access to new, innovative and cheaper products. The *2018 OECD Ireland Economic Survey* focused on productivity growth in the

business sector as a fundamental ongoing challenge for Irish enterprises. Indeed, further technological diffusion, and the complementary organisational changes needed to fully realise the benefits, must continue to be promoted to foster more efficient production processes and raise competitiveness.

While embracing new technologies is fundamental to support future Irish living standards, the potential for unintended adverse consequences in certain parts of the economy must not be ignored. Public policy settings may need to be revisited in order to ensure that any undesirable effects of a quickening pace of technological diffusion are mitigated. More broadly, policy measures will need to evolve to recognise the new structure of the economy and the associated market failures that could arise. The authorities recently released *Future Jobs Ireland,* which notes many of the important opportunities and challenges associated with future technological diffusion (Government of Ireland, 2019a). The task now is to develop tangible policy recommendations in response.

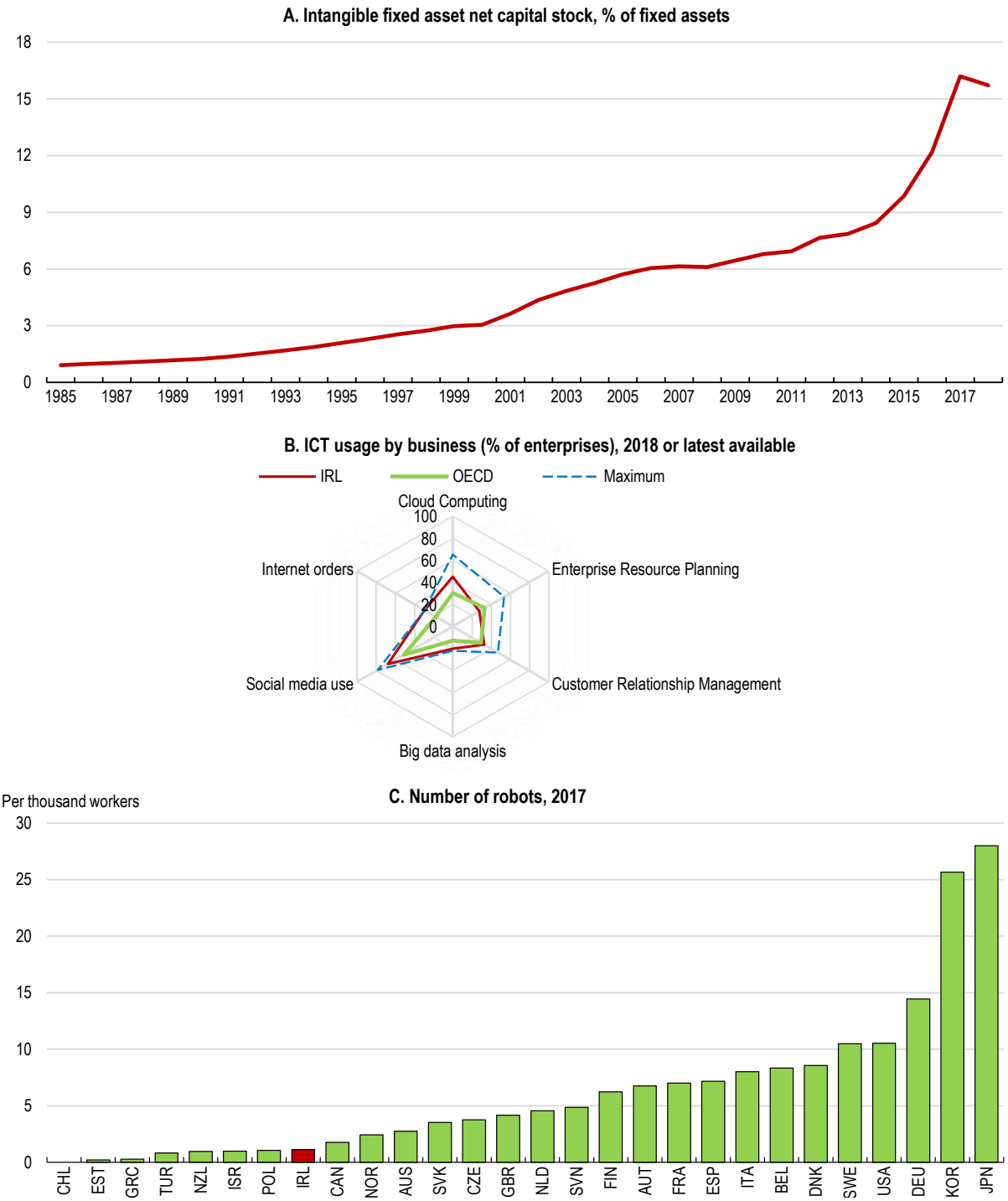
Trends in technological disruption

The expanding role of technology in the Irish economy has been reflected in the rising share of intangible capital in the total stock of fixed assets (Figure 2.4, Panel A), from 3% in 2000 to over 15% by 2018. This coincided with growing innovation activity, with the number of new Irish patents per capita increasing over the past decade and being above the average across OECD countries.

Ireland performs relatively well in innovation outputs relating to information and communications technology (ICT) and biotechnologies. However, the country lags in environmentally-related inventions, which is a concern given the pressing global need to combat environmental pressures and the fact that the market for such new technologies is likely to expand over the coming years. Furthermore, as outlined in the 2018 *OECD Economic Survey of Ireland*, the vast majority of innovation activities are undertaken in foreign-owned enterprises: research personnel account for less than 1% of the workforce in locally-owned firms. The forthcoming *OECD FDI Qualities and Impacts in Ireland* shows that 80% of all patents granted in Ireland are filed by foreign-owned firms (OECD, 2020). As such, of primary importance for most Irish businesses is the extent to which new innovations are successfully integrated into their operations.

Irish businesses surpass their peers in the adoption of some new technologies. In 2019, the Digital Economy and Society Index ranked Ireland as the leading country in the EU for the integration of digital technology. The proportion of Irish businesses utilising cloud computing, social media and big data exceeds the OECD average (Figure 2.4, Panel B). Nevertheless, less than one third of Irish firms use enterprise resource planning or customer relationship management systems to raise operational efficiency and sales. Recent OECD cross-country empirical analysis suggests that a 10 percentage point increase in the adoption of either of these technologies is associated with a 4-7½% increase in the level of multifactor productivity after five years (Gal et al., 2019). While robotics is not widely used in Ireland (Figure 2.4, Panel C), this partly reflects a lack of comparative advantage in those industries that use robots most intensively (e.g. car manufacturing). As technological adoption gathers pace, the authorities have been undertaking various initiatives to ensure that the environmental impact of new technologies and production processes are taken into account by firms (Box 2.1).

Figure 2.4. Intangible capital accumulation has risen notably



Note: Panel A includes all NACE Rev. 2 sectors other than administrative and support service activities. The two main components of intangible capital are computer software and research and development. In Panel B, "OECD" is the average across all OECD countries for which data are available. In this figure, data for enterprise resource planning, customer relationship management and social media use relate to 2017, while all other series are for 2018. In Panel C, robot use data is measured as the number of robots purchased by a given country. The robot stock is constructed by taking the initial stock starting value, then adding to it the purchases of robots from subsequent years with a 10% annual depreciation rate. The sample covers the manufacturing and utilities sectors only.

Source: Central Statistics Office, OECD ICT Access and Usage by Businesses database, International Federation of Robotics, OECD calculations.

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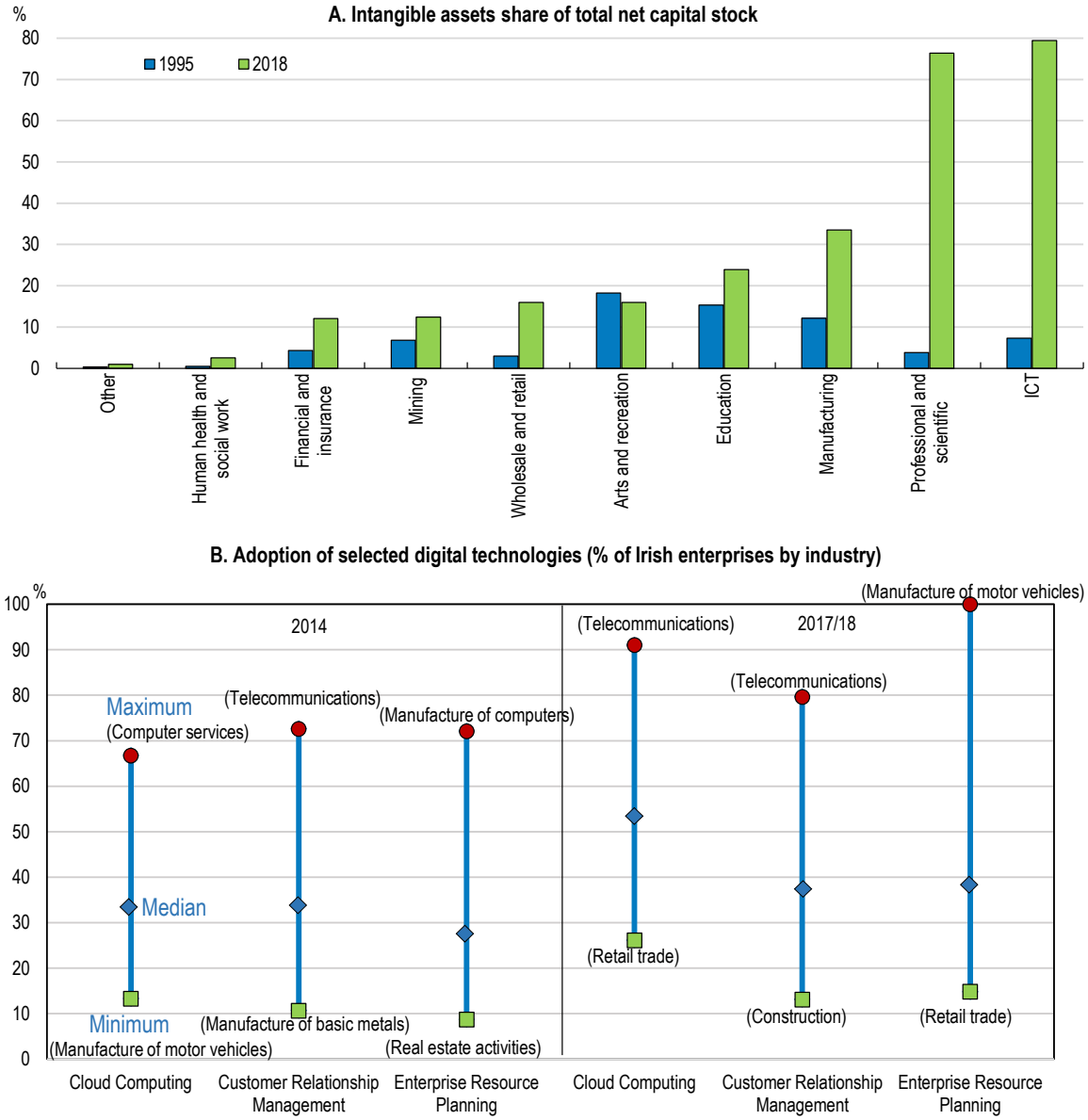
As in other OECD countries, technological adoption has been uneven across Irish industries. Intangible capital now accounts for a much higher share of the net capital stock than it did in the mid-1990s in professional services, ICT, manufacturing, mining, education and wholesale and retail trade (Figure 2.5, Panel A). In both professional services and ICT, the intangible capital share has steadily increased over the period, accounting for over two thirds of the net capital stock by 2017. Across industries, the stock of computer software has risen seven-fold in real terms since 1995. Nonetheless, the intensity of adoption varies. For example, over 90% of Irish businesses in the telecommunications industry made use of cloud computing in 2018, while less than one third of businesses in the retail trade sector did so.

Figure 2.5. Technological adoption has risen, but there are large differences across industries



Note: In Panel A, the 2018 value for the manufacturing sector corresponds to the most recent available number, which is for 2015. The "Other" category is a simple average across all other sectors. In Panel B, the vertical line represents the range across two-digit NACE industries of digital adoption (% of firms) of the selected technologies. On the right-hand-side panel, the data for enterprise resource planning and customer relationship management relate to 2017, while the data for Cloud Computing relate to 2018.
Source: CSO, Eurostat, OECD calculations.

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Cross-country comparison suggests that there has been especially strong ICT uptake in Ireland's education, utilities and wholesale and retail trade sectors over the past few decades (Table 2.1). In contrast, scope for higher ICT spending intensity exists in Ireland's agriculture, construction, transport, accommodation and food, human health and arts and entertainment industries.

The degree of technological adoption varies with business size, as in many other OECD economies. While over 60% of large firms purchased cloud computing services in 2018, only around 40% of small Irish businesses did so (Figure 2.6). This may reflect the vast gap in the proportion of large and small firms with access to fast broadband connections. Insofar as this is due to poor broadband availability for some of these businesses, the National Broadband Plan that aims to provide all people and businesses with access to high-speed broadband should be beneficial. Compared to their peers in the Netherlands, Sweden and Denmark, small Irish businesses are indeed less likely to have access to fast broadband connections.

The efficiency of the public sector can also benefit from using new technologies. As consumers and businesses increasingly become familiar with new digital forms of communication, governments can digitise existing processes and offer public services online. Furthermore, more data combined with smart analysis should allow governments to offer more efficient public services and new innovations that improve citizens' wellbeing. Unlike in almost all other Irish industries, the intangible capital share of fixed assets in public administration has declined since the mid-1990s. Indeed, it appears that government could better leverage new technological opportunities, not least in engaging with Irish citizens (Figure 2.7). In this spirit, there have been plans to introduce the "Digital Postbox" system that has been successfully implemented in many other OECD countries. This would allow citizens to receive government correspondence in digital form through a secure electronic mailbox.

Table 2.1. Sectoral information technology investment across countries

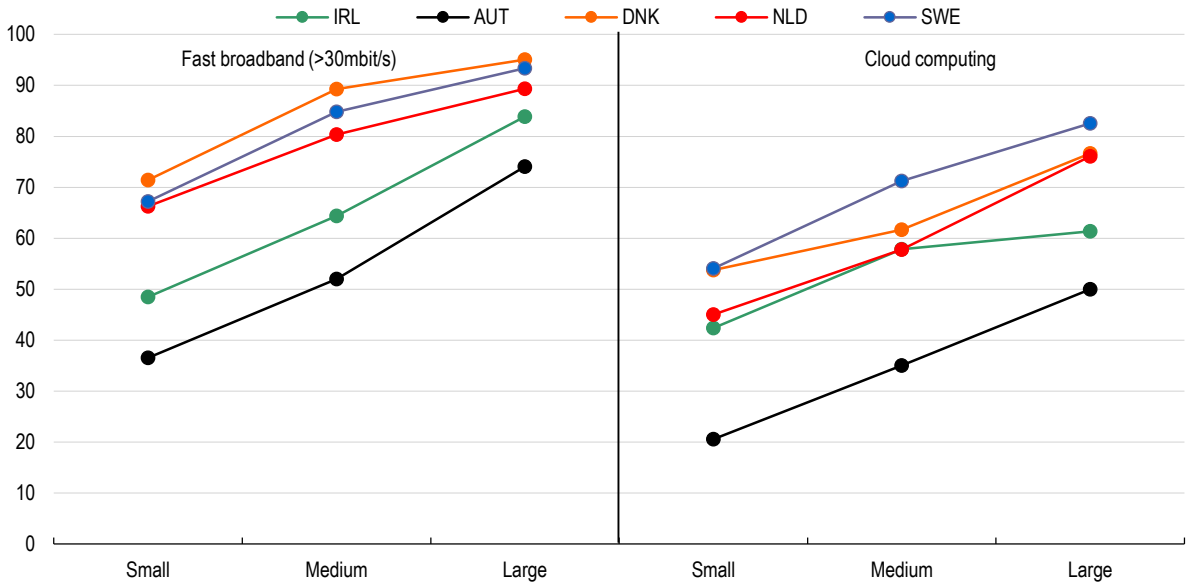
Average ICT equipment investment as a share of total machinery and equipment investment (%), 2000-2017

	IRL	AUT	NZL	DNK	NLD
Agriculture and forestry	0.5	1.3	5.8	10.0	2.0
Mining	3.8	0.7	7.6	21.8	1.7
Manufacturing	6.7	6.5	11.0	14.6	5.3
Electricity, gas, steam	18.8	17.3	17.5	7.0	3.0
Water supply and waste	10.8	6.0	N/A	9.8	4.5
Construction	4.2	7.9	7.1	18.9	8.1
Wholesale and retail trade	27.1	16.8	17.2	18.8	14.7
Transport	1.3	7.9	11.0	5.1	6.5
Accommodation and food	7.7	11.9	9.9	17.3	10.0
ICT	76.3	84.8	83.3	52.4	41.0
Financial and insurance	34.1	13.0	35.7	49.1	62.3
Real estate	40.4	13.5	17.7	50.8	N/A
Professional & scientific	43.6	35.9	46.8	34.9	36.8
Administrative and support	15.3	8.7	36.6	12.6	3.9
Public administration	24.3	17.7	16.0	10.7	31.2
Education	43.3	30.1	36.8	41.7	26.0
Human health	9.4	59.7	78.7	22.8	33.5
Arts and entertainment	18.6	38.0	39.8	29.5	45.7
Other services	9.9	24.2	31.4	51.8	9.8

Note: Cells are highlighted in orange where the ICT share of investment is at the bottom of the distribution across the countries presented. Cells are highlighted in blue where Ireland is at the top of the distribution for ICT investment.
Source: OECD.

Figure 2.6. Technological adoption varies greatly by firm size

Percentage of businesses using the given technology, 2018



Note: A "small" firm has 10-49 employees, a "medium" firm 50-249 employees and a "large" firm over 250 employees. Bourke and Roper (2019) report that the proportion of "micro" businesses (1-9 employees) adopting cloud computing is in line with that of small businesses in 2018.
Source: OECD ICT Access and Usage by Businesses database.

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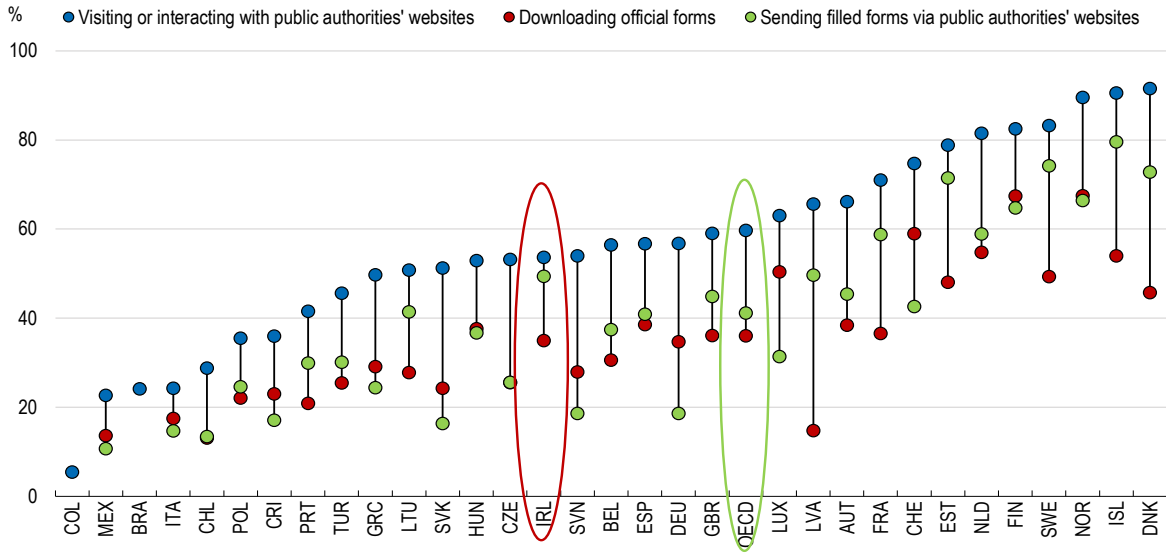
Figure 2.7. Engagement with citizens through government websites is relatively rare

Use of digital government services by individuals, percentage of individuals aged 16-74, 2018



Source: OECD ICT Access and Usage by Households and Individuals database.

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In sum, the use of technology has expanded considerably within the Irish economy. Nevertheless, the extent of technological adoption has varied across technologies, sectors and types of firms. Looking

forward, there would appear to be substantial scope for more adoption of new technologies that promote efficiency and, ultimately, the wellbeing of the population.

Box 2.1. Encouraging green technologies in the Irish business sector

As technological change increasingly prompts Irish businesses to invest in new capital, the environmental footprint of additions to the capital stock must be considered. As some benefits from using green technologies will accrue to the general public through lower pollution, waste and greenhouse gas emissions, there is a role for public policy in encouraging the uptake of green technologies by firms. Acknowledging this, transitioning to a low carbon economy is one of the five key pillars of *Future Jobs Ireland*.

Ireland has introduced several initiatives to encourage more environmentally-friendly production techniques against the backdrop of the *Climate Action Plan*. These include:

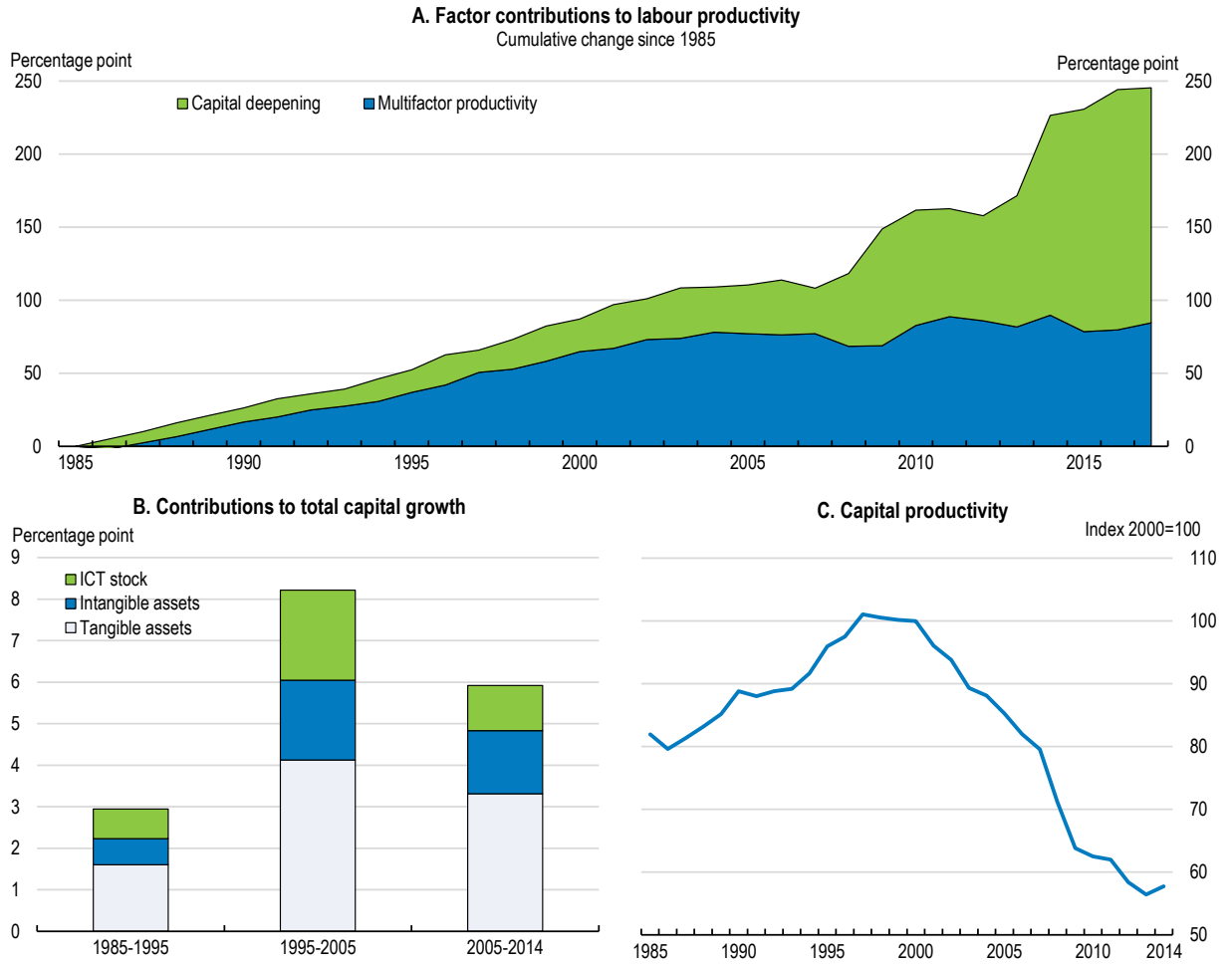
- Green Start – For SMEs, aimed at increasing the level of environmental awareness relating to regulatory compliance and the development of basic environmental management capabilities.
- Green Plus – Financial support for undertaking an assignment designed to assist company managers in developing a high level of environmental management capabilities, improving environmental efficiency and sustainability.
- Environmental Aid Programme – Designed to assist companies to implement major renewable energy or energy efficiency initiatives.
- Energy Efficiency Grants and Supports – Typically up to 30% grants for energy efficiency investments.
- The Green Business Initiative – Run by the Environmental Protection Agency, the initiative includes self-help web tools and site visit support to assist businesses in improving resource efficiency.

Further technological adoption by businesses can boost productivity and incomes

Multifactor productivity has stalled in Ireland since the early 2000s (Figure 2.8, Panel A). Although labour productivity is the highest among OECD countries, this rests on investment in capital. Compared with the 1985-1995 period, the subsequent two decades saw strong growth in the accumulation of tangible capital along with ICT and intangible assets (Figure 2.8, Panel B), resulting in a slump in capital productivity (Figure 2.8, Panel C).

A notable feature of the Irish economy is the large productivity gap between foreign-owned multinational companies and Irish-owned firms (Figure 2.9). The forthcoming OECD *FDI Qualities and Impacts in Ireland* publication indicates that the gap exists across all sectors and regions (OECD, 2020). This partly reflects lower capital investment by local firms. However, there is also a notable difference in multifactor productivity between these two groups. Based on firm-level analysis, the *2018 OECD Ireland Economic Survey* highlighted a positive and widening gap in multifactor productivity between foreign-owned and Irish-owned companies in most sectors of the economy.

Figure 2.8. Labour productivity growth in Ireland has been driven by capital inputs



Note: Data are from the OECD Productivity Statistics except those of Ireland over 2015-2017 in Panel A, which are calculated based on the Central Statistics Office. In Panel A, GDP per hour worked in terms of US dollar measured by constant Purchasing Power Parity (PPP) in 2010. In Panel C, GDP per unit of capital service in terms of US dollar measured by constant PPP in 2010.
Source: OECD Productivity Statistics database, CSO, OECD calculations.

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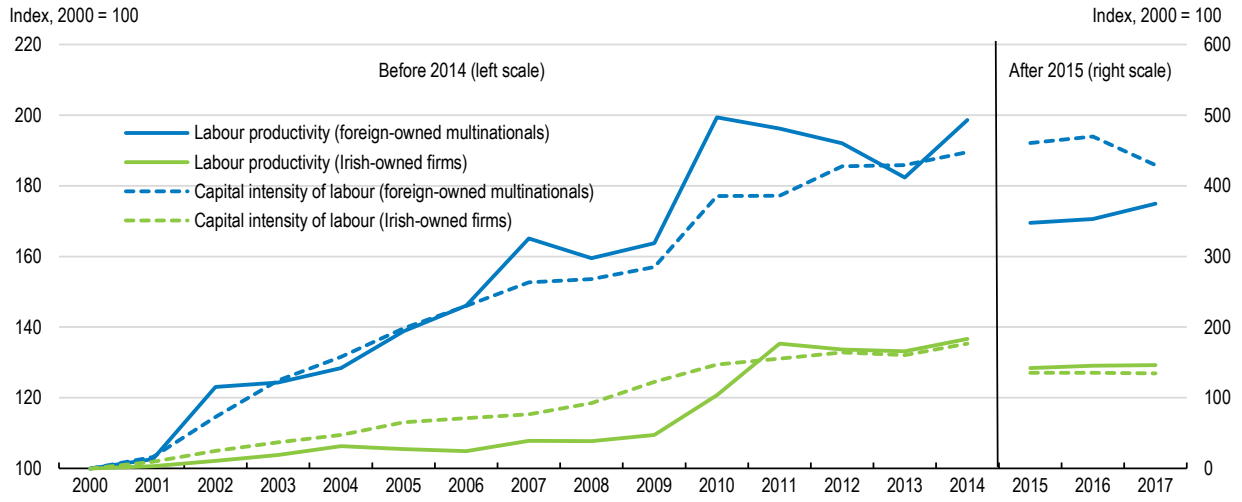
While there is substantial scope for further investment in new technologies in Ireland, especially in smaller Irish-owned enterprises, this will not be sufficient. Indeed, there has been no discernible relationship between intangible capital investment and industry productivity (Figure 2.10). Sustainable productivity gains can only be achieved if these technologies are complemented by the right skills and organisational capital (Box 2.2). Policymakers will also need to ensure that both investments in new technologies and the growth of enterprises that successfully integrate them are not constrained by regulatory impediments or market failures.

Figure 2.9. The productivity gap between foreign and Irish-owned firms has widened



Source: CSO.

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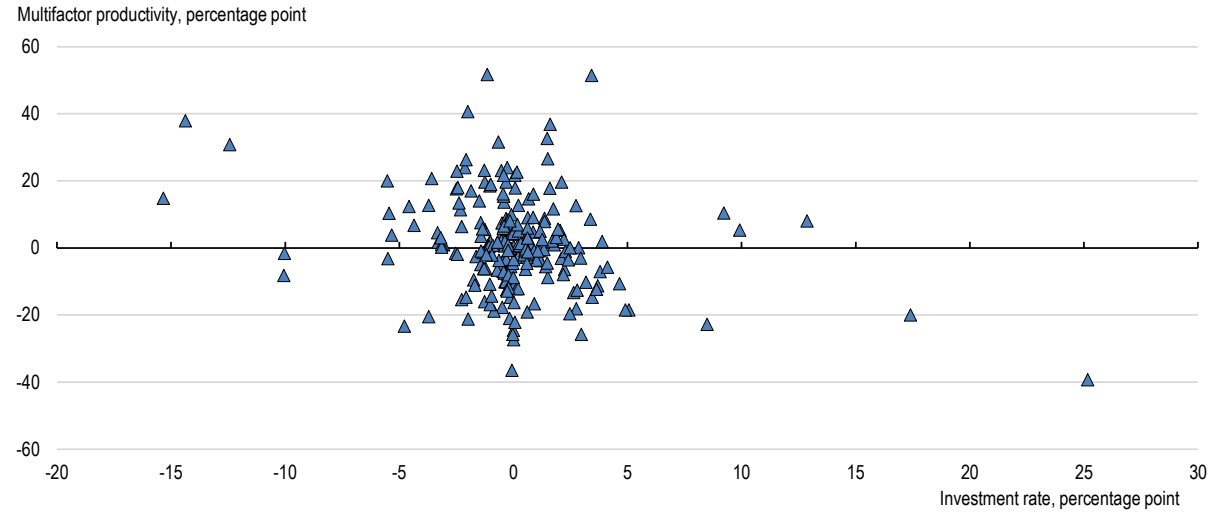
Figure 2.10. Intangible investments have not always been accompanied by higher productivity



Note: Investment rate on the horizontal axis is measured by investment in innovative property and software as a share of value-added. Data for 2015 are excluded for the manufacturing sector and professional, administrative and support services, as they are disrupted by sharp increases of the investment rates of 37.3% and 9.1% respectively.
Source: CSO, INTAN-Invest database.

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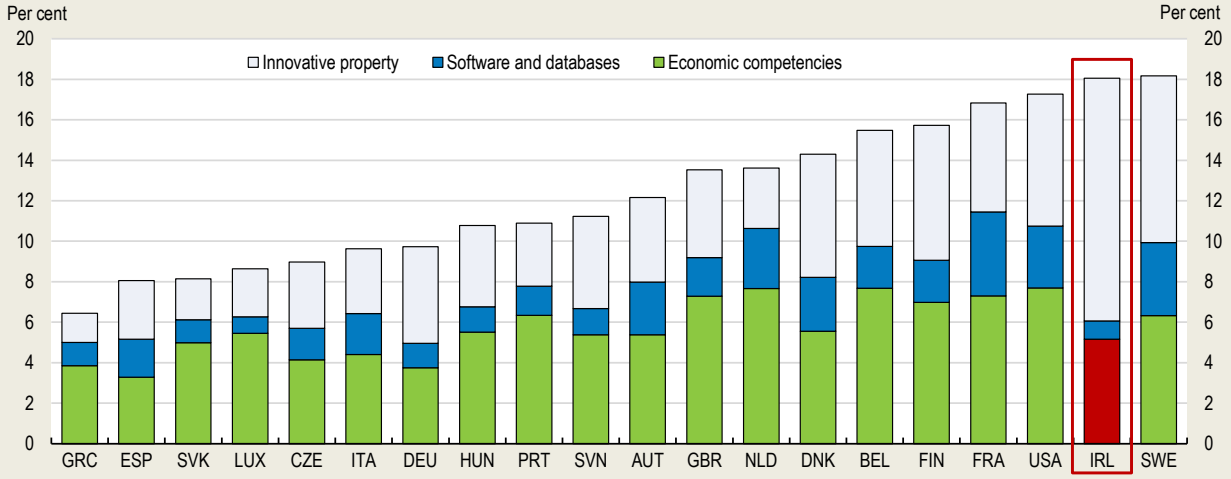
Box 2.2. The importance of economic competencies to Irish productivity growth

A study by the European Investment Bank provides a complete dataset of intangible investment in 19 European countries and the United States, covering a range of knowledge-based assets that national accounts do not include (Corrado et al., 2016). It highlights that the intangible investment rate in Ireland ranks second among the participating countries, but this largely reflects the accumulation of intellectual property, which can be heavily influenced by one-off cross-border transfers by multinationals. Investments in software and economic competencies are relatively low (Figure 2.11).

Figure 2.11. Investments in software and economic competencies are low in Ireland

As a share of gross value added of all industry, average over 2010-2016



Note: Innovative property refers to investment in a range of knowledge assets that may have intellectual property protection, including R&D, mineral exploration rights, designs, artistic originals, and new product development costs in financial industry. Economic competencies refers to investment in a range of knowledge assets that may have no intellectual property rights, including corporate branding, organisational and human capital management innovations.
Source: INTAN-invest database.

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Investment in economic competencies includes investment in organisational and human resource management innovations, designs and artistic originals, and corporate branding. Sluggish multifactor productivity growth in Ireland may be related to the relatively low investment in economic competencies for two reasons. First, to the extent that those knowledge-based assets are not captured by the national accounts, their returns are embodied in multifactor productivity, which is measured as a residual of output that cannot be explained by capital and labour inputs. Second, organisational capital, managerial competency and workers' skills can play an important role in translating new technologies into productivity gains by adapting the technology and reorganising workplaces to optimise their impact (Gal et al., 2019). An analysis of a panel of Irish industries finds that an increase in the investment rate in economic competencies is associated with a significant rise of multifactor productivity in subsequent years (Figure 2.12).

Figure 2.12. Investment in economic competencies is associated with rising multifactor productivity

Cumulative response of multifactor productivity to a one percentage point increase of the investment rate

Note: Estimated from data on 14 NACE Rev.2 sectors over the period 2000-2017. Vertical lines show two-standard errors of the estimates. Following Duval and Furceri (2011), estimates were obtained by linear projections of cumulative changes of multifactor productivity on a change in the investment rate in economic competencies, which are specific to forecast points ranging between 2 years prior to and 5 years following the change. Time-fixed industry dummies are involved in each projection equation to take into account the heterogeneity in trend productivity growth across the sectors. Dummies for the manufacturing sector in 2015 and thereafter are also included to control for the GDP jump in that year. Regressions are weighted according to value-added by industry. Standard errors are Newey-West heteroskedasticity-robust estimates.
Source: CSO, INTAN-Invest database, OECD calculations.

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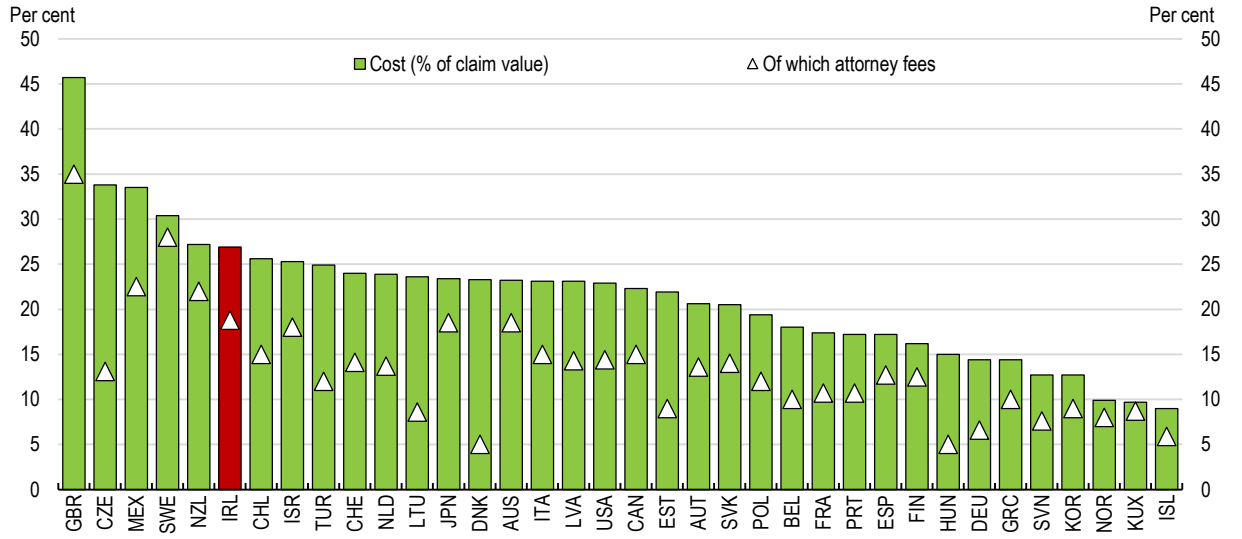
Regulatory reforms can support further intangible investment

New technologies often need to be accompanied by investments in knowledge-based capital. However, enterprises can be discouraged from making such investments due to their public good properties (Andrews and Criscuolo, 2013). That is, they are non-rival in their use and only partially excludable. As a result, greater intangible asset investment can be encouraged by the provision of appropriate protection for valuable information, knowledge and data not covered by patents or copyrights. In 2018, Ireland implemented the EU Directive 2016/943, which aims to standardise the national laws in EU countries against unlawful acquisition, disclosure and the use of trade secrets.

While this is a positive development, effective enforcement of the law would benefit from a reduction in legal service costs, which are particularly high in Ireland relative to other OECD countries (Figure 2.13). These can be particularly burdensome for small and medium enterprises that have tight operational cash flow (National Competitiveness Council, 2018). High costs partly reflect stringent regulations on legal services, as summarised by the OECD Product Market Regulation (PMR) indicators. In particular, restricting the form of legal business to sole proprietorships and prohibiting inter-professional co-operation unduly raises the cost of contract enforcement, notably in highly specialised and interdisciplinary areas such as intellectual property law. The Legal Services Regulations Act 2015 established the Legal Services Regulatory Authority as an independent watchdog for legal services. While it established new regulations to introduce legal partnerships and limited liability partnerships, no multi-disciplinary practices have yet been set up. To lower the very high costs of legal services, the Legal Services Regulatory Authority needs to be active in raising the transparency of legal costs and implementing regulatory reform that enhances

competition in the sector. Allowing inter-professional cooperation in the provision of legal services will be a further step in this regard.

Figure 2.13. Costs are high in the Irish legal services sector



Note: Data relate to Mexico City for Mexico, Tokyo for Japan, and New York City for the United States, respectively.
Source: World Bank.

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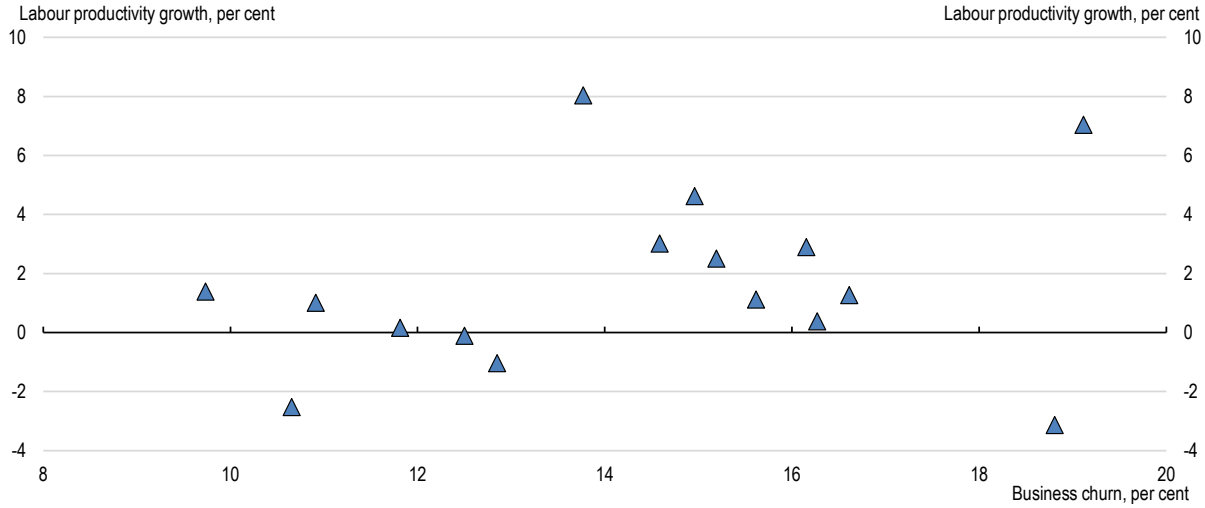
Promoting greater business dynamism is also key to encouraging the uptake of new technologies and thereby boosting productivity. Overall, the Irish sectors with lower productivity growth have tended to be characterised by low entry and exit rates (Figure 2.14). Business dynamism can be a source of competitive pressure that encourages improved resource allocation by firms. In striving to improve their performance, businesses look to integrate new technologies and use them in the most efficient way possible. In turn, economies that support efficient resource allocation can boost business dynamism through enabling high potential businesses to enter markets and grow unimpeded. Such an environment also promotes knowledge spillovers from frontier firms, which are especially important in the Irish context given the large productivity gap between foreign-owned and locally-owned firms.

In Ireland, business dynamism overall is relatively low (Figure 2.15, Panel A and Panel B). As discussed in the forthcoming *OECD FDI Qualities and Impacts in Ireland*, even foreign-owned firms are characterised by lower business dynamism compared to their peers in other countries (OECD, 2020). Irish sectors with low business dynamism tend to be associated with lower labour productivity growth. This suggests that reforms that promote firm entry and exit can be important for reinvigorating Ireland's productivity performance.

Figure 2.14. Labour productivity has been particularly weak in sectors with low firm entry and exit

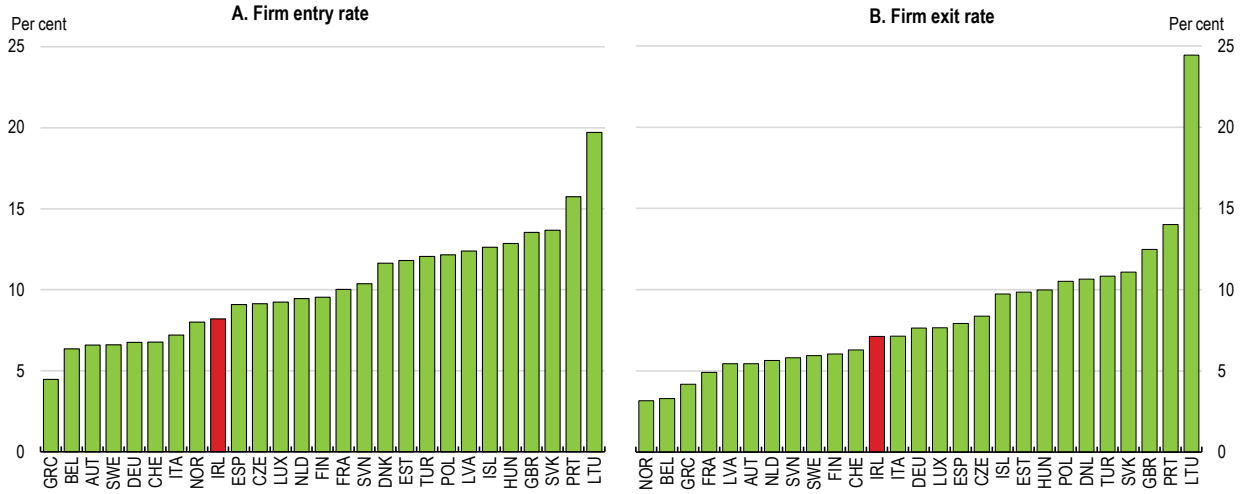


Note: The vertical axis refers to average annual labour productivity growth rates of 16 NACE Rev. 2 sectors over 2000-2017. The horizontal axis refers to business churn measured by the sum of firm births and firm deaths as a share of the total number of active firms in 2016. Firm deaths are measured by one year of inactivity.
Source: CSO.

StatLink https://doi.org/10.1787/888934079991

Figure 2.15. Firm entry and exit rates are lower in Ireland than in many other countries

In 2017 or latest year available



Note: The firm entry and exit rates are measured by firm births and deaths as a share of total number of active firms, respectively. The firm exit rate for Ireland is estimated as of 2016 based on one year of inactivity.
Source: Eurostat, CSO.

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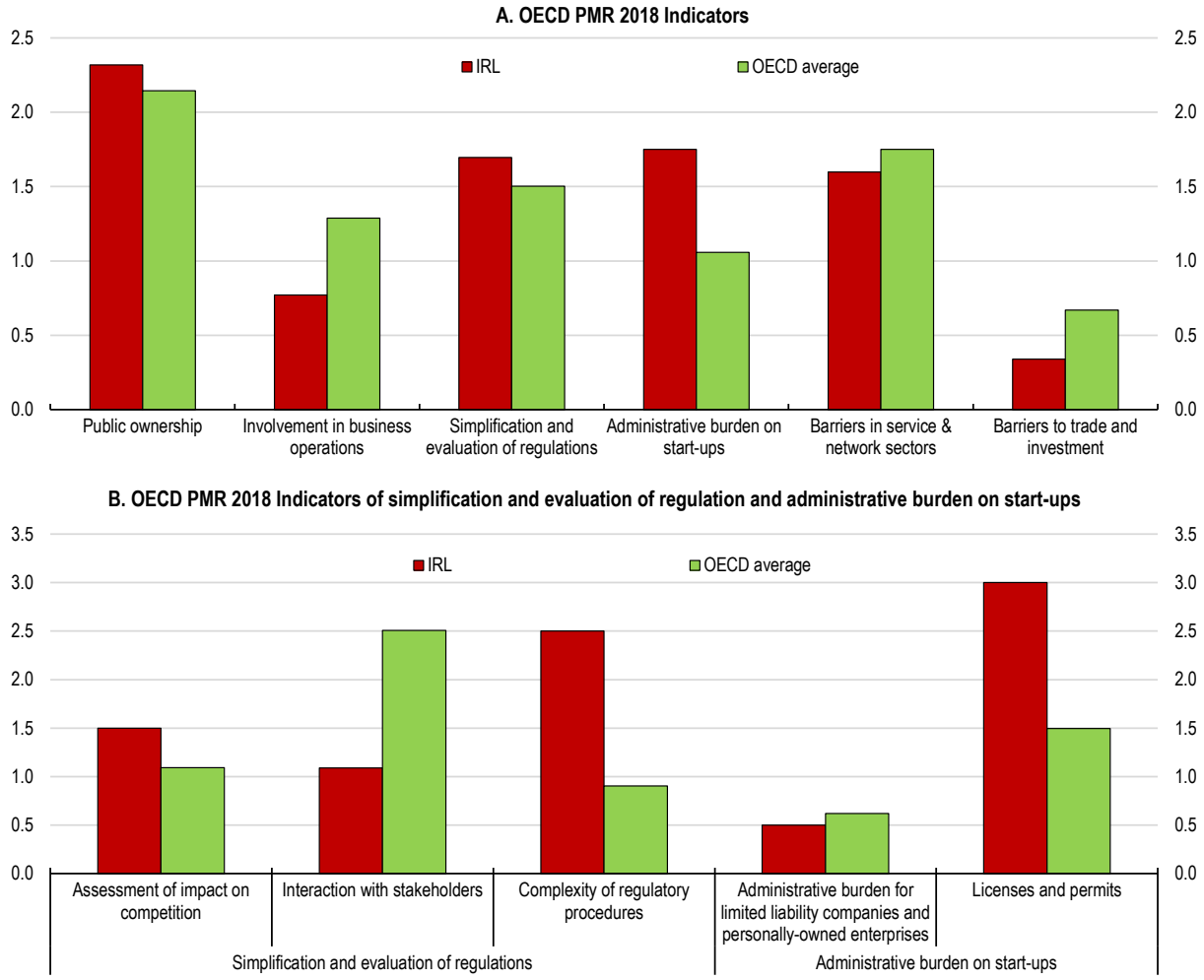
Some regulatory obstacles inhibit entrepreneurial activity and the growth of high-potential firms in Ireland. While the 2018 OECD PMR indicators show that the regulatory burden in Irish product markets is close to the OECD average, regulatory burdens on start-ups are relatively onerous (Figure 2.16, Panel A). More granular indicators show that the burden stems from complex regulatory procedures and the system for licences and permits (Figure 2.16, Panel B). The authorities have established an Integrated Licence

Application Service, which allows businesses to renew and apply for licences online. Nevertheless, only a subset of the licenses necessary for businesses are available on the system, as participation by licensing authorities is not mandatory. The government should continue to monitor licensing requirements and the systems that facilitate them. Efforts should be made to link other existing licensing portals, such as that administered by the Revenue Commissioner, with the Integrated License Application Service. Furthermore, licensing authorities without online procedures should be required to participate, thereby establishing the service as a true one-stop shop for business licenses.

Figure 2.16. Complex regulatory procedures and the licensing and permission process impede business activity



Note: The OECD Indicators of Product Market Regulation are a comprehensive and internationally-comparable set of indicators that measure the degree to which policies promote or inhibit competition. The indicator ranges from zero (least stringent) to six (most stringent).
Source: OECD Product Market Regulations Statistics database.

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Further easing financing constraints can also promote investment in technology by small young firms

The ease of obtaining finance may also impact the adoption of new technologies and investment in complementary assets by firms (Andrews et al., 2018). In particular, there may be market failures in the provision of finance to small young firms that are seeking to invest. This is because such enterprises are more likely to lack credit history and collateral to secure a loan. The problem may be especially pronounced when such firms have a high share of intangible assets that are difficult to value, such as patents, or when they are involved in innovation processes that have uncertain outcomes. A recent report by the European Investment Bank found that Irish small and medium enterprises face barriers for accessing traditional bank finance for technological projects (European Investment Bank, 2019a).

In Ireland, borrowing conditions for small firms are tight. Data from the European Central Bank indicate that interest rates for Irish small and medium enterprises have been around 2 percentage points higher than in the average euro area country over the past few years. Furthermore, the spread between the interest rate charged to large firms and small and medium enterprises has been about 1 percentage point higher in Ireland than in the euro area. This partly reflects the relatively high default rates of small and medium Irish enterprise as well as limited competition between lenders. The banks in Ireland account for 90% of the market share of lending to small and medium enterprises (Central Bank of Ireland, 2019). As a consequence of high borrowing costs, borrowing by the sector has been weak.

Public institutions have introduced various measures to overcome the market failures associated with the financing of smaller and younger firms. Enterprise Ireland, a state agency focused on export-oriented businesses, manages various co-investment funds that match private funding with public support. Such an arrangement is beneficial in that it reduces the role of the public sector in “picking winners” but activities tend to be concentrated in those segments of the economy where such investors are already active.

The Strategic Banking Corporation of Ireland has also been established. This institution usually takes a wholesale lender approach whereby it provides funding to other financial institutions (“on-lenders”) at attractive terms rather than directly lending to borrowers. The current set of on-lenders comprises three banks and four non-bank institutions, though there is scope to add more on-lenders as well as new products geared towards those firms facing the most severe financing constraints (National Competiveness Council, 2018). The Strategic Banking Corporation also manages the Credit Guarantee Scheme, which offers guarantees of up to 80% on SME loans, in return for a 2% annual premium to the insurer. In 2018, the scheme was revised to include new types of loans such as invoice discounting and factoring. Through Enterprise Ireland and the Local Enterprise Offices, authorities should continue to raise awareness of the existence of the scheme and these new features.

Efforts have also been made to promote equity financing as an option for small businesses. The Enterprise Security Market in the Irish Stock Exchange sets less strict listing and disclosure requirements for firms. However, the number of firms listed on the exchange remains limited. Ireland’s Employment and Investment Incentive Scheme, a tax relief for investing in firms in early stages, is currently under review. In reforming the measure, the government should consider broadening its scope to cover those firms transitioning to public equity. Such a measure currently exists in the United Kingdom (the Employment and Investment Incentive Scheme). This would support equity financing of businesses listing on public exchanges.

Fintech has emerged as a new source of financing for young small firms that face financing constraints through the traditional banking system. Fintech includes lending-based crowdfunding and balance sheet lenders (leveraged non-bank institutions that transform risk and maturity). Online alternative financing is more common in Ireland than in most European countries. The Central Bank of Ireland has created an

"Innovation Hub" to increase engagement between regulators and those fintech firms that do not have reporting requirements. While ensuring that the emergence of such firms does not contribute to the build-up of systemic financial risks, the authorities should encourage such new financing channels for the business sector, which can spur competition in the financial sector and bring down the price of borrowing for small and medium enterprises looking to invest in new technologies.

Some Big Tech companies with a large user base have also recently entered the EU payments market (e.g. Apple Pay, Google Pay and P2P payments and donations via Facebook Messenger). The growth of fintech firms may be constrained by the absence of an established customer base, limited access to soft information about potential customers, a lack of reputation and brand recognition and a higher cost of capital (Vives, 2019). However, most of these constraints do not apply to the Big Tech platforms, giving them substantial potential for disrupting financial markets. While this could put some competitive pressure on the banks, features of BigTech firms such as substantial network effects and the ability to restrict other companies from accessing their technological infrastructure could hamper competition (Chapter 1). The central bank and competition authorities should continue to closely monitor the level of market concentration in the non-bank financial sector.

Skill needs are evolving as new technologies are embraced

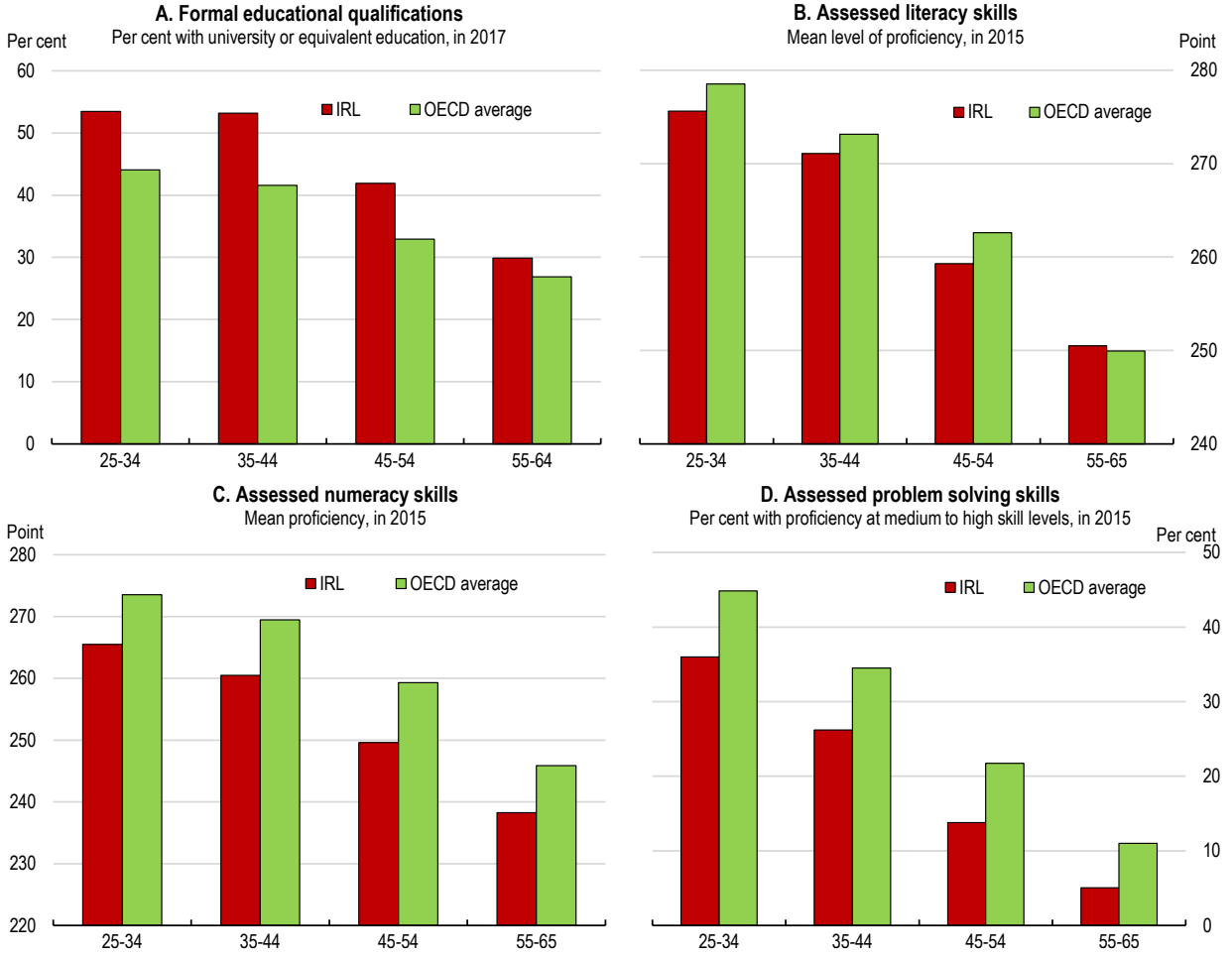
Skill shortages are becoming more acute

Worker skills play a crucial role in making the most of new technologies when they are incorporated into production processes. Complementary investments in organisational capital and skills have been identified as a key influence in the transmission of new technologies into productivity gains (Gal et. al. 2019). As outlined in Box 2.2, investment in economic competencies in Ireland has been relatively weak. Furthermore, despite high levels of formal educational qualifications and strong educational outcomes in schools (as measured by the Programme for International Student Assessment), the skills of Irish adults remain relatively low. The share of the population with university or equivalent level education is close to the OECD average for those between ages 55 and 64, and well above for those aged 25 to 34 (Figure 2.17, Panel A). Even so, their literacy skills remain close to the OECD average, and numeracy and problem solving skills are significantly lower for all age cohorts (Figure 2.17, Panel B, C and D).

The comparatively modest skill level of the Irish population may be a factor in explaining significant skill shortages, relative to other countries, in the context of rapid technological adoption. In 2015, skill shortages reported by Irish employers were more severe than in other OECD countries. Greater skill needs were reported in all categories ranging from basic content and process skills such as reading and writing, mathematics and critical thinking, to systems skills such as decision-making and resource management skills (Figure 2.18). The period since then has seen a further rise in shortages of labour, with a steady increase in the ratio of new job vacancies to unemployed (Figure 2.19).

Figure 2.17. Skills of Irish adults are lower than indicated by formal qualifications

By age cohort



Note: Panel A shows the share in the population. Panel B, C, and D shows the mean scores of and the share in the respondents of the OECD Survey of Adult Skills.

Source: OECD Educational Attainment dataset, OECD Survey of Adult Skills (PIAAC).

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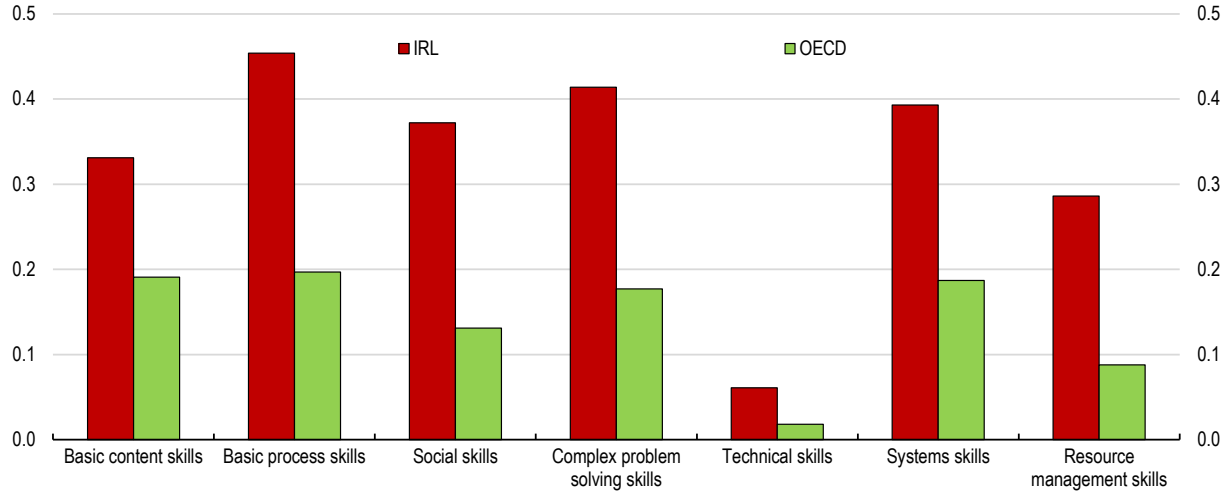
Figure 2.18. Skill shortages in Ireland stand out

Index normalised between -1 and 1, 2015



Note: Positive values represent shortages, while negative values correspond to surpluses, on a scale that ranges between 1 and -1.
Source: OECD Skills for Jobs database.

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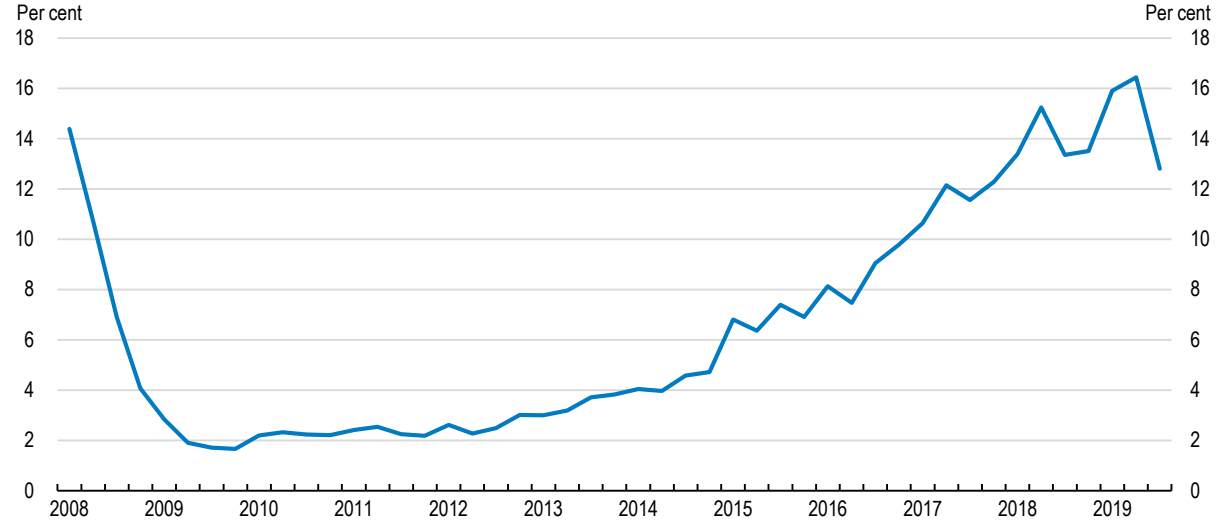
Figure 2.19. The labour market has been tightening

Number of new vacancies per unemployed worker



Source: CSO.

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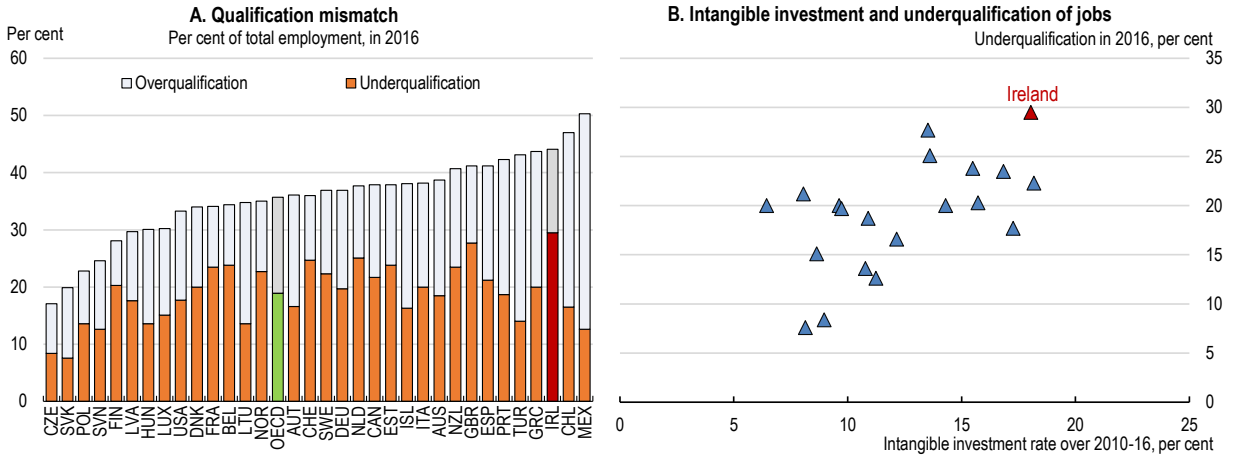
Technological progress requires active lifelong learning

Severe skill shortages may become a serious impediment to the further uptake of new technologies and productivity growth. Recent empirical studies by the OECD show that, in addition to low managerial quality, lack of ICT skills and mismatches of workers to jobs curb digital technology adoption and diffusion (Andrews et al., 2018; Gal et al., 2019). Indeed, 76% of Irish firms reported unavailability of staff with the

right skills as one of the major obstacles to investment (European Investment Bank, 2019b). Given that multinational firms can more easily attract workers as they pay higher wages (OECD, 2018a), this problem can be particularly pronounced for smaller locally-owned Irish firms.

In turn, technological adoption can exacerbate skills shortages by making the skills obtained through formal education obsolete. In 2016, 29.5% of jobs in Ireland were performed by underqualified workers, the highest in the OECD (Figure 2.20, Panel A). A cross-country comparison highlights a positive relationship between intensity of intangible investment and underqualification of jobs (Figure 2.20, Panel B). This suggests that investments in innovative properties and software lead to a greater need for re-skilling workers. Over the past decade, Irish sectors with higher intangible investment rates tended to experience a significant rise in job vacancy rates(Figure 2.21). The Further Education and Training Authority of Ireland (SOLAS) has found that the difficulty of filling vacancies by occupation has recently increased (McNaboe et al. 2018). In particular, more than half of recruitment agencies surveyed in April 2019 reported skills as a barrier to filling vacancies for ICT professionals and production and process engineers.

Figure 2.20. Greater intangible capital investment necessitates re-skilling



Note: In Panel A, jobs are classified as overqualified when workers have an educational attainment that is higher than that required by them, while classified as underqualified if the opposite is true. In Panel B, data cover 19 European countries and the United States. Intangible investment rate is average investment in innovative properties, software, and economic competencies as a share of value-added over the period.
Source: OECD, INTAN-INVEST database.

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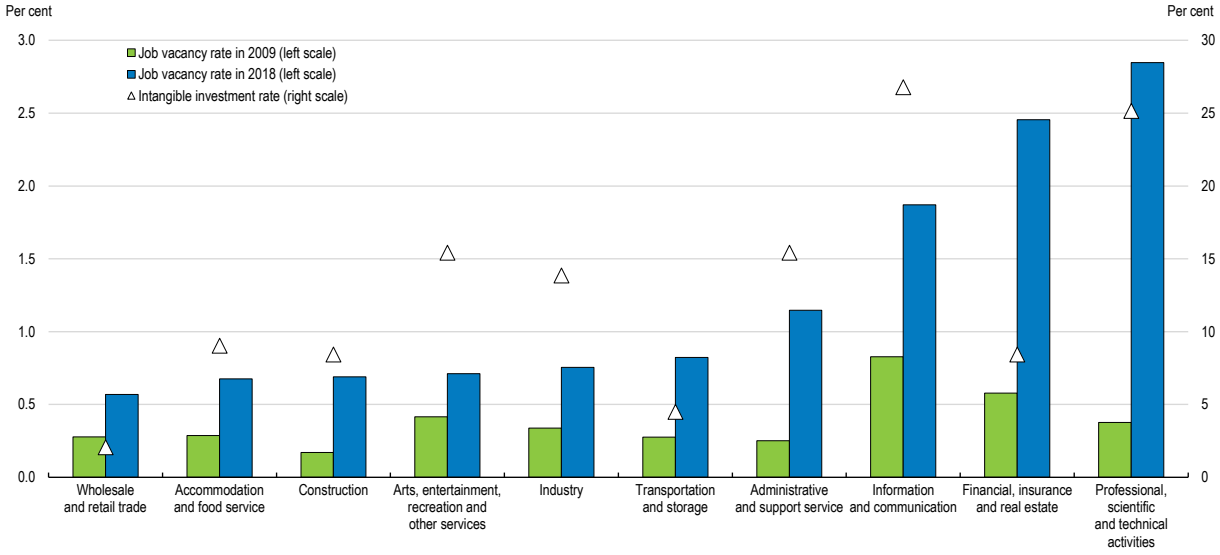
These developments suggest that further technological diffusion in the Irish economy will increasingly need workers to obtain new skills. This requires an effective adult learning system that provides continuous opportunities to develop, maintain and upgrade skills through learning and training at all ages (OECD, 2019a). While the formal education system must equip graduates with the new skills needed, comparatively low participation in other lifelong learning opportunities suggests that these should be a particular focus for policymakers. Past work has highlighted an array of skill areas that may need honing to succeed in technology-rich work environments. These include complex problem solving and general cognitive skills, notably literacy, numeracy and ICT skills (OECD, 2019a). The latter will also be important for encouraging Irish citizens' use of digital government services (Figure 2.7 further above). The recent OECD review of *SME and Entrepreneurship Policy in Ireland* underscores the need to better encourage the accumulation of digital skills in small and medium enterprises (OECD, 2019b).

Figure 2.21. Sectors with high intangible investment face difficulties in filling job vacancies



Note: Intangible investment rate is average investment in innovative properties, software and economic competencies as a share of value added over 2009-2015.
Source: CSO, INTAN-Invest database.

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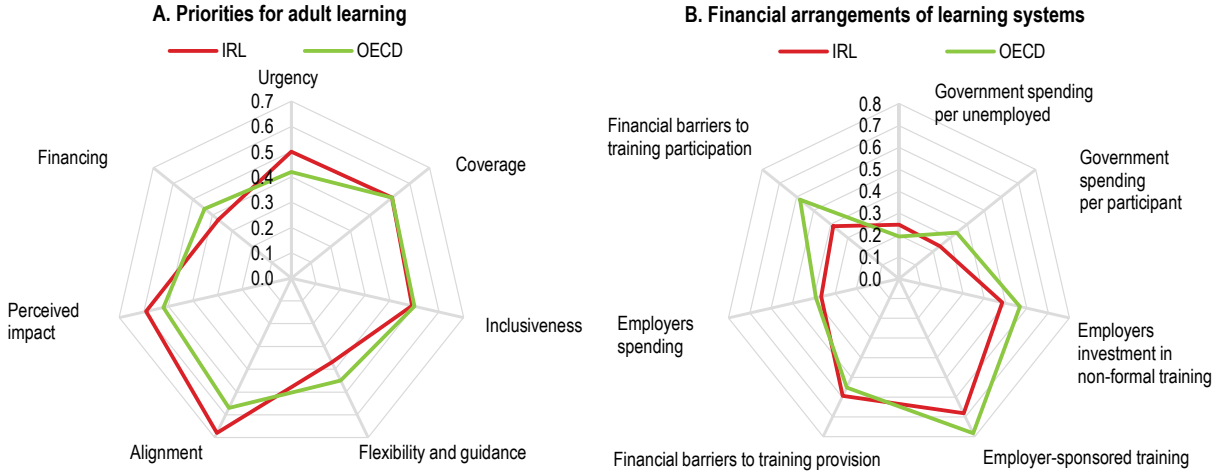
There is scope for improving the adult learning system in Ireland

The Irish adult learning system has performed better than the OECD average in aligning learning provision to the needs of the labour market and in providing impactful programmes in terms of wage returns and perceived usefulness (Figure 2.22, Panel A). A survey by the Higher Education Authority reported that the vast majority of employers were satisfied with recent higher education and further education and training graduates across a range of personal and workplace attributes, including technical literacy and communication and numeracy skills (Higher Education Authority, 2019).

Nevertheless, increasing trade openness and rapid changes in industrial structures are calling for updating the Irish adult learning system with greater urgency. In addition, the adult learning system performs worse than the OECD average in terms of its flexibility and guidance of individuals and financial arrangements. While recent decades have seen an increase in the participation rate in lifelong learning activities in Ireland (European Commission, 2019), it was still only around the median of European countries at 12.5% in 2018 (Figure 2.23, Panel A). Participation is particularly low relative to other countries for young Irish workers with lower-secondary and tertiary education (Figure 2.23, Panel B). As in other European countries, older workers participate less in adult education than younger workers.

Figure 2.22. Performance indicators for the adult learning system are mixed

Indicators normalised to 0-1, 1 = top OECD country and 0 = bottom OECD country



Note: In Panel B, the indicators for financial barriers to training participation and financial barriers to training provision take a higher value for a lower barrier, and vice versa.
Source: OECD Priorities for Adult Learning Dashboard; OECD calculations.

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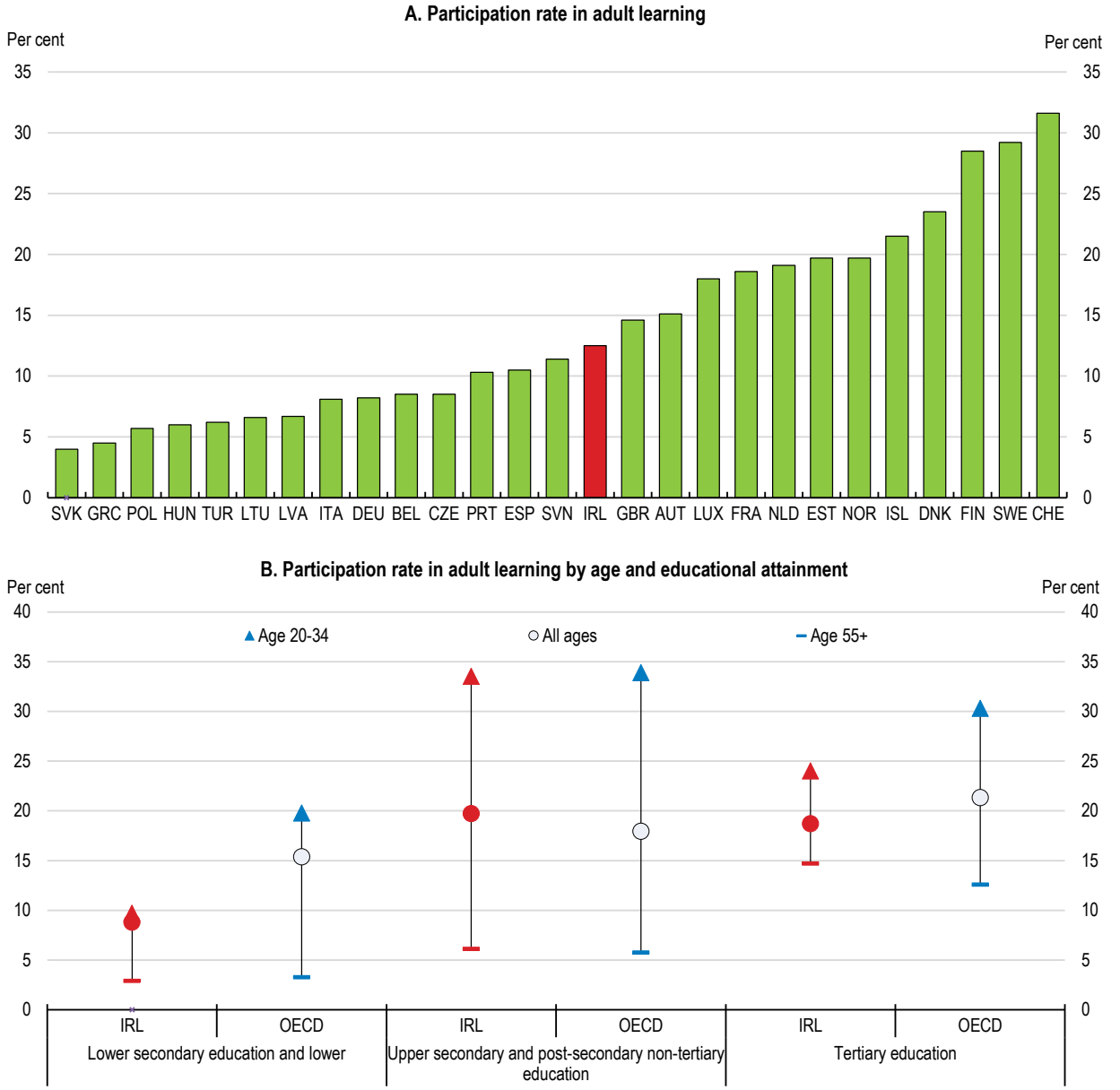
According to a survey by the European Commission, a lack of perceived need for training is the primary reason for individuals not participating in programmes across all age groups (Table 2.2). It also shows that around 20% of the adult population searched for information on training and education, below the average of OECD members at 26%. This highlights the need for better promoting the benefits of education to workers and orienting them towards relevant courses. In addition, some age groups face distinct barriers to training participation. For example, the cost of training is cited as an obstacle by 26.8% of those aged between 25 and 34, higher than in some other countries with higher participation such as Denmark, Finland and Sweden. While training cost becomes less important for older age groups, family responsibilities become more of a constraint. Almost one in five workers aged between 55 and 64 see health or age as an obstacle to participation in education programmes.

Financial arrangements for training programmes are a particularly important issue for adult learning in Ireland. The OECD Survey of Adult Skills (PIAAC) reported that 20.7% of those who wanted to participate in training chose not to do so because they found it unaffordable. Public financial support for lifelong learning should be designed taking into account that cost is a particularly strong impediment to training participation at early stages of work life. In Ireland, per participant public spending on training, firms' investment in non-formal training as a share of gross value added and provision of employer-sponsored training are lower than the OECD average (Figure 2.22, Panel B). Since 2000, firm funding of structured training as a share of payroll costs has steadily fallen for both locally-owned and multinational enterprises.

Figure 2.23. Young and older workers must be better encouraged to participate in training



Note: All data are for 2018. Panel A shows the share of adults aged 25-64 who participated in formal and non-formal education and training during the four weeks preceding the survey. Panel B shows the share of adults aged 18-74 who participated in formal and non-formal education and training during the four weeks preceding the survey. In Panel B, OECD refers to the non-weighted average of 27 European members of the OECD except for the group for age 55 and more with lower secondary and lower education levels, where the average of 21 European countries is shown due to availability of data.
Source: Eurostat, Adult Education Survey.

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Table 2.2. Obstacles to participation in education and training

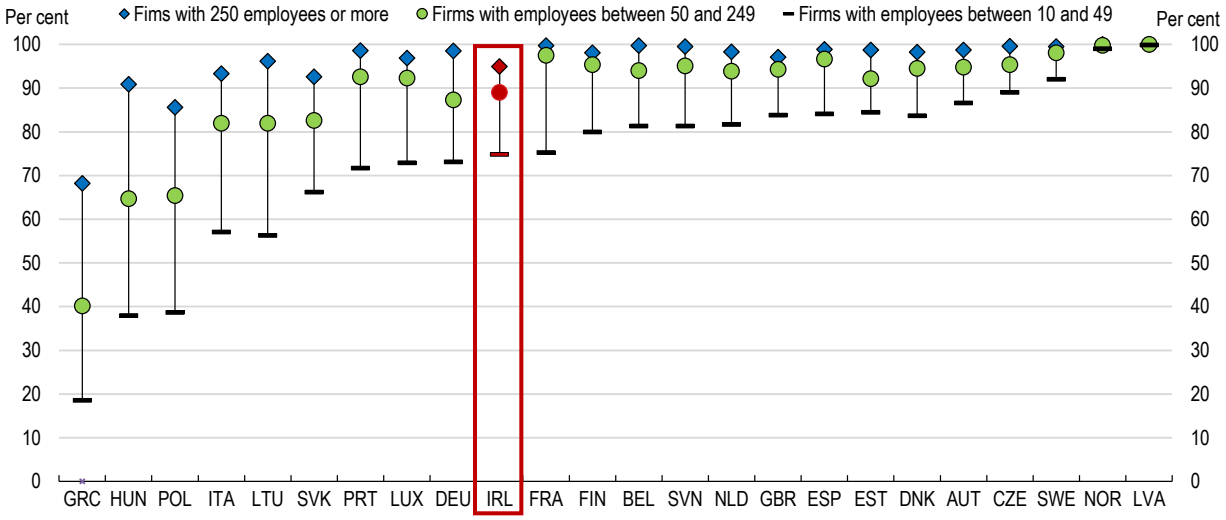
In 2016, per cent

Age	No perceived need	Family responsi-bilities	Schedule	Cost	Health or age	Distance	No suitable education or training activity	Lack of employer or public services support	Pre-requisites	Other personal reasons
25-34	51.3	30.2	25.7	26.8	-	5.6	5.5	5.0	-	9.3
35-44	47.7	44.5	23.9	19.5	5.4	5.8	3.5	4.5	3.5	11.0
45-54	57.0	39.6	21.1	16.3	8.1	7.3	4.8	4.8	3.2	7.9
55-64	57.0	24.9	16.5	10.4	17.0	4.3	4.9	-	3.1	10.8

Ireland is raising the National Training Fund (NTF) levy, which finances programmes for those seeking employment as well as in-employment training, from 0.7% to 1.0% of payroll over 2017-2020. While this is increasing available resources, the training fund can improve the incentives for employers to invest in training by moving towards a more demand-driven scheme. Conversion of the revenue-generating scheme to a cost-reimbursement scheme, in which firms pay a levy but can claim expenses back for training costs they incur, would enhance incentives for training provision (IBEC, 2017). This should increase the number of training opportunities provided by small firms. While 94.9% of large firms in Ireland provided continuing vocational training in 2015, only 74.8% of small firms with employees between 10 and 49 did so (Figure 2.24). To avoid a fragmentation of the fund and ensure training is aligned with overall skill priorities, such an arrangement should be based on consultations with employers through the NTF Advisory Group.

Figure 2.24. Smaller firms tend to train less than larger firms

Percentage of firms providing continuing vocational training, in 2015



Source: Eurostat.

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In addition, a better mix of financial incentives should be achieved by considering various measures including: i) a further shift of active labour market policies toward training (discussed further below); ii) the introduction of paid training leave; and iii) the provision of preferential loans to cover training costs to individuals. Ireland provides no statutory entitlement to training leave, which is common in the majority of

European countries that have comparatively high training participation. Provision of paid training leave and preferential loans alongside statutory leave would encourage training uptake by both older and younger workers, who tend to face higher opportunity costs and liquidity constraints on learning, respectively. For example, France compensates workers undertaking training leave for between 80 and 100% of their wage, while Austria provides an allowance equivalent to the unemployment benefit. Advanced Learner Loans in England and Lifelong Learning Loans (*Levenslanglerenkrediet*) in the Netherlands provide loans for upskilling and reskilling. Such programmes usually have repayment due at the end of the course and may alter the amount due depending on post-training earnings. Furthermore, as in some European countries, establishing payback clauses in labour contracts can be an option to prevent disputes between employers and employees over training costs in the context of increasing worker mobility (European Centre for the Development of Vocational Training, 2012).

Policies that support childcare assistance may help reduce the burden from family responsibilities for middle-age groups. In this regard, the full introduction of income-related subsidies for childcare under the National Childcare Scheme will be important. However, the increase of childcare benefits should be accompanied by measures to curb mounting childcare fees, including expansion of childcare capacity (see Chapter 1). Given that shortage of time is a major obstacle across all age groups, the Irish adult learning system should enhance its flexibility through greater use of distance learning. In 2015, only 10% of trainees participated in a distance learning programme, a low share compared with other OECD countries. As part of the government's "Human Capital Initiative", some funding has been provided to higher education institutions to develop online learning courses. In addition, facilitating flexible arrangement of working hours would also help, including through statutory entitlement to reduced work hours for training reasons.

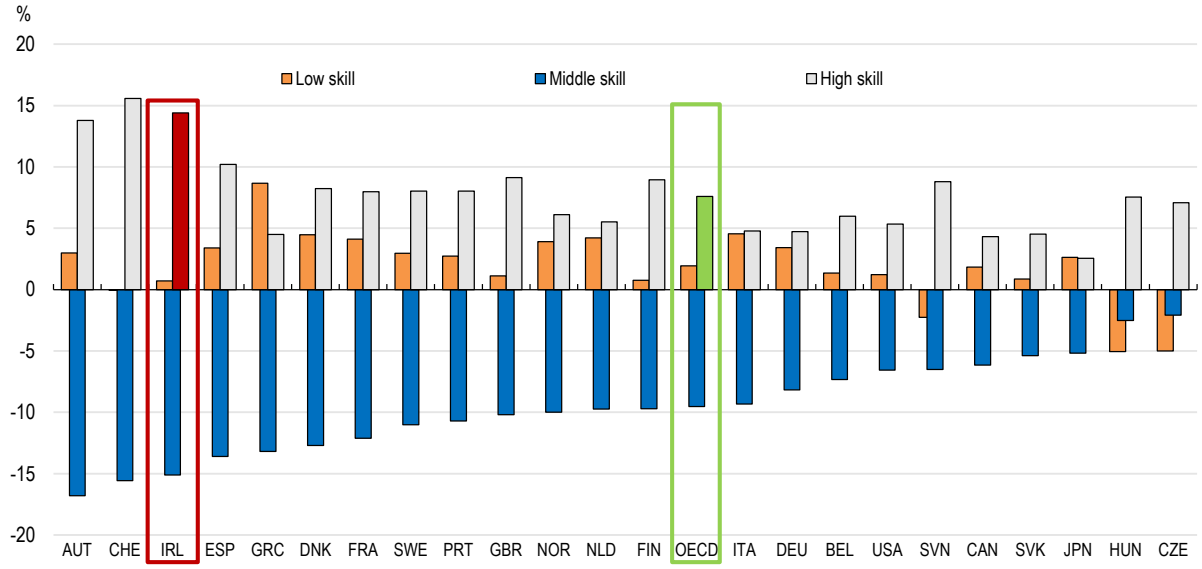
The nature of some jobs will change with greater technological diffusion

As discussed, new technologies will be the basis for the creation of new products and services and open up the markets for new types of equipment and skills. Through raising productivity, technological advances can reduce prices and improve quality, boosting aggregate demand and benefitting consumers. These processes will create new jobs. Indeed, recent OECD empirical work has highlighted that investments in information and technology in Ireland have delivered significant job creation (OECD, 2020). However, technological transformation leads to creative destruction. While many jobs are created, some will change and others will be lost (Frey and Osborne, 2013; Nedelkoska and Quintini, 2018). Focusing on Ireland, estimates suggest that around 16% of jobs are at high risk of automation, slightly above the OECD average. A further 27% of jobs will likely face significant change in how they are performed (OECD, 2019c).

New empirical research undertaken for this *Economic Survey* suggests that while technological change has not impacted job loss rates in Ireland overall, it may have been associated with displacement in some sectors that have been identified as having high automation risk (Box 2.3). Such sectors tend to be located in regions of Ireland that have relatively low incomes and were hardest hit through the crisis (Doyle and Jacobs, 2018). Furthermore, they have workers with lower education levels (Doyle and Jacobs, 2018). This comes on the back of already rising levels of job polarisation, with the share of high-skilled jobs having increased at the expense of middle-skilled jobs (Figure 2.25).

Figure 2.25. Jobs growth has been particularly strong for those with high skill levels

Percentage point change in share of total employment, by skill level, 1995 to 2015



Source: OECD Employment Outlook, 2017.

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In this context, providing people with the right skills to succeed in a technologically rich world is important. As already discussed, improving education and training systems, especially for adults, will be key. The reallocation of workers across industries will also need to be facilitated, including by helping them transition to new geographic areas of work that are thriving (discussed further below). This transition must be accompanied by social protection systems that support displaced workers and effectively reorient them towards new higher productivity jobs.

Box 2.3. Has technological adoption in Ireland been associated with job losses?

Limited empirical work has been done focusing on the extent to which technological adoption has already been associated with any job displacement in Ireland. To shed some light in this area, this analysis explores whether job loss rates have been associated with intangible capital investment at the industry level. The indicator of job loss is aggregated up from the firm level, whereby a decline in the number of paid employees in a given year is recorded as job loss. An increase in the number of paid employees at a firm in a year is recorded as no job loss, meaning the indicator is truncated at zero.

The empirical approach uses the following regression equation:

$$\Delta JL_{i,t} = \boldsymbol{\alpha_1}\Delta Intangibles_{i,t} + \alpha_2 \Delta GVA_{i,t} + \delta_i + \gamma_t \ (1)$$

Where Δ denotes the log difference, *JL* is the job loss rate at the industry level *(i)* in a given year *(t)*. Consistent with past studies (e.g. Bassanini and Scarpetta, 2002), intangible assets are used as a proxy for embodied technological change. *Intangibles* is a vector of variables that relate to the intangible capital stock (and these are measured as a ratio to the total stock of all fixed assets). Specifically, the data decompose the total real intangible capital stock into that component related to computer software and that related to business R&D. *GVA* is a measure of real value added by industry. This is included to control for the impact of cyclical conditions on changes in job loss.

As mentioned, the existing literature underscores that while intangible capital accumulation may substitute for labour in some sectors it may complement it in others. This is problematic for the estimation of the $\boldsymbol{\alpha_1}$ coefficients in the above equation. As a result, past work by Doyle and Jacobs (2018) is used to identify the sectors in Ireland that are at high risk of job automation. This is combined with the information in Table 2.1 (further above) to create a dummy variable representing sectors with relatively high automation risk that have seen strong ICT investment relative to other comparable countries in the recent period. This dummy is then used to create an interaction term that is added to the estimation equation:

$$\Delta JD_{i,t} = \boldsymbol{\alpha_1}\Delta Intangibles_{i,t} + \alpha_2 \Delta GVA_{i,t} + \alpha_3 \Delta Intangibles_{i,t} * High\ Autom.Risk_i + \delta_i + \gamma_t \quad (2)$$

The $\boldsymbol{\alpha_1}$ coefficients in equation (2) is the estimated effect of growth in the given measure of the intangible capital stock on the growth of job loss rates at the sample mean. The α_3 coefficient captures any additional estimated effect for those industries with high automation risk. A positive coefficient on the interaction term (i.e. α_3) suggests that high automation risk industries have been associated with greater job loss as a result of intangible capital accumulation than the average Irish industry over the time horizon.

The results of the regression analysis are presented in Table 2.3. As expected, the negative estimated coefficient on the GVA term highlights that improvements in gross value added in an industry are associated with a lower job loss rate. Column 1 highlights that increases in the growth rate of the measure of computer software intensity have not been associated with greater job loss rates in the average industry. However, there has been a positive relationship between the job loss rate and computer software intensity in those industries deemed to have high automation risk and recently strong intangible relative to tangible capital accumulation. Similarly, the results in Column 2 suggest that growth in business R&D has been associated with job loss in high automation risk industries, though the effect is not as large or statistically significant as that for computer software.

Table 2.3. Estimation results

Dependent variable = $\Delta JL_{i,t}$, 2006-15

	(1)	(2)
$\Delta Comp.Software_{i,t}$	-0.04	
	(0.8)	
$\Delta Comp.Software_{i,t} * High\ Autom.Risk_i$	1.23***	
	(2.82)	
$\Delta R\&D_{i,t}$		0.07
		(1.33)
$\Delta R\&D_{i,t} * High\ Autom.Risk_i$		0.69*
		(1.89)
$\Delta GVA_{i,t}$	-0.53*	-0.81*
	(1.78)	(1.83)
Observations	90	89
R^2	0.46	0.58

Note: *, **, *** denotes statistical significance at the 10%, 5% and 1% level respectively. T-statistics are presented in parentheses. All regressions include time and industry fixed effects, robust standard errors and are estimated with a lagged dependent variable. The regressions are estimated across 12 industries during the years for which the CSO publishes job churn statistics and for which other indicators are available. The results are robust to the exclusion of the GVA term from the regressions.

Taken together, these results suggest that the impact of intangible capital on the labour market cannot be generalised. In some industries, growth in intangibles may even be associated with lower job loss. Nevertheless, it does appear that increased growth in the stock of computer software has been associated with job displacement in some Irish industries identified as having high automation risk. As detailed by Doyle and Jacobs (2018), some high automation risk industries such as wholesale and retail trade have shed workers over the past decade.

The analysis presented here does come with several caveats and opens up areas for further work. The dependent variable is an imperfect measure of job displacement, as it could miss significant disruption in jobs if the number of paid employees is little changed between years. Better information with regard to gross job flows (as opposed to a net measure) and the reasons for job separations could provide important insights. Furthermore, further work assessing the parts of the Irish economy that have experienced the most rapid job creation from technological progress could provide a better understanding of the sources of Irish economic growth.

Critical to raising re-employment prospects for displaced workers is a system of well-designed and adequately resourced active labour market programmes. These should provide displaced workers with timely access to basic job search services and target the workers that require more intensive re-employment services or retraining.

Total spending on active labour market programmes per unemployed worker in Ireland is around the OECD average, but a relatively high share of spending is for direct job creation. The effect of such measures is immediate, but the programmes are usually time limited and subsequent employment prospects can be modest (Card et al., 2015). While some spending is focused on social inclusion objectives, consideration should be given to reorienting active labour market policies further towards training programmes. Such spending is likely to have a longer-lasting positive employment effect, provided that the programmes are well-designed. In particular, training programmes should be further developed that specifically target those transitioning to new jobs as a result of technological advances.

To the extent possible, training should be targeted at workers before they lose their job. In Luxembourg, a pilot programme called “Digital Skills Bridge” provides digital skills training for workers in firms that are identified as facing significant digital disruption and have jobs at high risk of automation (OECD, 2019d). In a similar way, Ireland’s “Explore” programme, introduced in 2018, could eventually be oriented towards firms in different parts of industry that have a high probability of phasing out certain jobs. At present, Explore is a digital skills training programme targeted towards older manufacturing sector employees. It involves close collaboration with employers, rests on a workplace-relevant professional project, and is tailored to the employee. However, participation is limited to just 500 individuals nationwide. Evaluations are being conducted on the outcomes of initial participants. Insofar as these suggest strong benefits for future job quality and earnings, the authorities should consider expanding this programme, along with other reskilling programmes found to have positive labour market effects, to workers in other sectors where technological change is expected to cause job losses.

In the event that a worker loses their job, re-employment support should be provided as soon as they are notified of the dismissal. However, statutory notice periods are short in Ireland, with employers only needing to give workers two weeks notice ahead of a dismissal if their tenure has been shorter than four years. Regardless, employer cooperation in allowing workers to engage with re-employment services during the notice period should be encouraged.

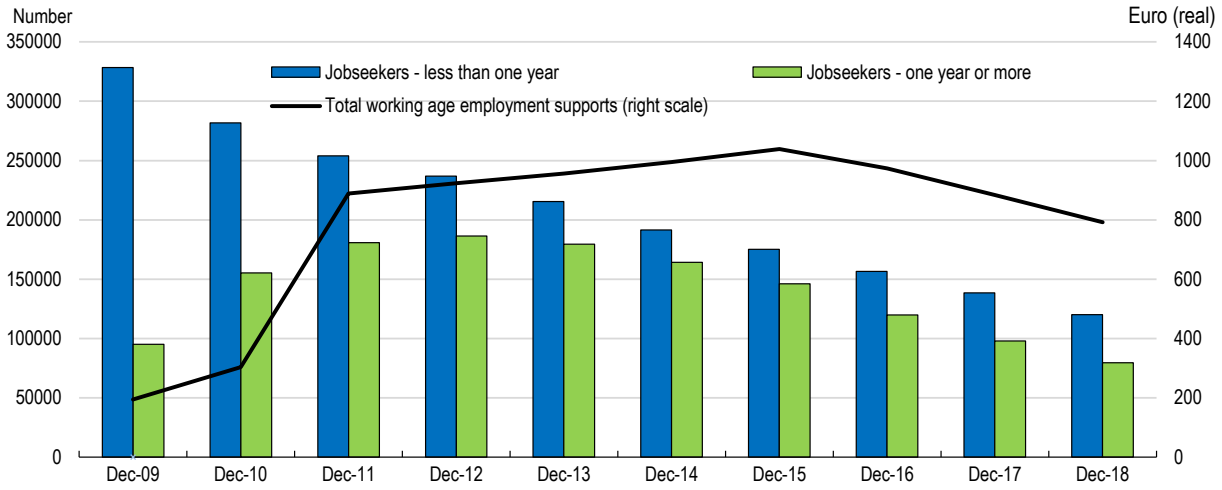
Some displaced workers will temporarily require financial support in the form of unemployment benefits. The Irish welfare system reduces the risk of people falling into poverty. Although income inequality at market incomes is the highest across the OECD, it is around the OECD average after taxes and transfers are taken into account (OECD, 2018a). Unemployment benefit replacement rates are around the OECD average, but must be combined with effective job search assistance programmes to support displaced

workers. Past analysis of such programmes in Ireland highlights that they can be totally ineffective if not combined with monitoring of participants and conditionality (McGuinness et al., 2019).

Unemployment benefits should be designed in a way that minimises disincentives for displaced workers to take up new jobs. In Ireland, unemployment benefits are paid at flat rates, meaning that there may be less of a financial incentive for a low-paid worker to take up a new job. Countervailing policy measures to reduce participation tax rates have been introduced. One of them is the Working Family Payment (WFP), formerly the Family Income Supplement, a payment equivalent to 60% of the difference between a family's weekly income and a specified income limit that depends on family size. The reformed WFP was designed to reduce the disincentives to work, with the payment tapered with any increase in earnings. The authorities should continue to monitor potential work disincentives stemming from the 60% effective marginal tax rate once family income rises above the specified threshold.

At the same time, the capability of Ireland's public employment services needs to be reoriented to be able to deal with new cohorts of jobseekers, like those displaced due to technological change. Until quite recently, Ireland's public employment services were focused on the large group of unemployed people displaced by the construction downturn and financial crisis. On account of the sustained economic recovery, this group has dwindled, meaning that public employment services should be able to dedicate more resources to easing job transitions of workers displaced by structural change. While the total number of jobseekers has halved since 2009, the resources dedicated to working age employment supports have quadrupled (Figure 2.26).

Figure 2.26. The pool of jobseekers has declined more rapidly than resources devoted to activation



Note: Total working age employment supports are deflated by the CPI to obtain an approximation of the real euro value.
Source: CSO, Department of Employment Affairs and Social Protection.

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The government undertook a streamlining of benefit receipt and activation services in 2011 to change the manner in which services are delivered to jobseekers. The new system was eventually named *Intreo*. This included simplification of employment services through one-stop-shop centres and a new case management system. Better monitoring systems were also introduced via compulsory engagement with an *Intreo* case officer and a new statistical profiling model unveiled to guide activation, engagement and intervention.

An evaluation of the *Intreo* model in the early years of its operation suggests very weak benefits for activation. There was modest evidence of an employment effect six and nine months after engaging with employment services, but no effect on the likelihood of a claimant entering an education, training or

employment placement course (Kelly et al., 2019). One of the issues identified was missing data for statistical profiling and miscalculation of the profiling scores. Such scores are useful for segmenting individuals into different categories for engagement with the Department of Employment Affairs and Social Protection. Robust profiling can allow better targeting of those jobseekers most at risk of becoming long-term unemployed and the development of more tailored services for individual jobseekers depending on the employment barriers they face. The authorities should ensure that such profiling systems are performing effectively. In doing so, they should consider incorporating "soft" factors such as job search behaviour, aspirations, preferences, attitudes and life satisfaction in addition to administrative data on the jobseeker. In Germany, including soft factors improved the fit of statistical profiling models considerably (Desiere et al., 2019).

To enable further robust evaluations of the effectiveness of activation programmes, further data collection efforts should be prioritised. Assessing the effectiveness of the programmes and the extent to which the activities undertaken by public employment services are evolving with the changing pattern of jobseekers requires the availability of more detailed data (Lavelle and Callaghan, 2018). Information about the number of referrals, number of engagements, number of workshops, average caseload per case officer, and average frequency of engagement at regular intervals should all be collected and published regularly.

Online platforms will allow more workers to participate in the gig economy

Growing digital platforms offers both opportunities and challenges

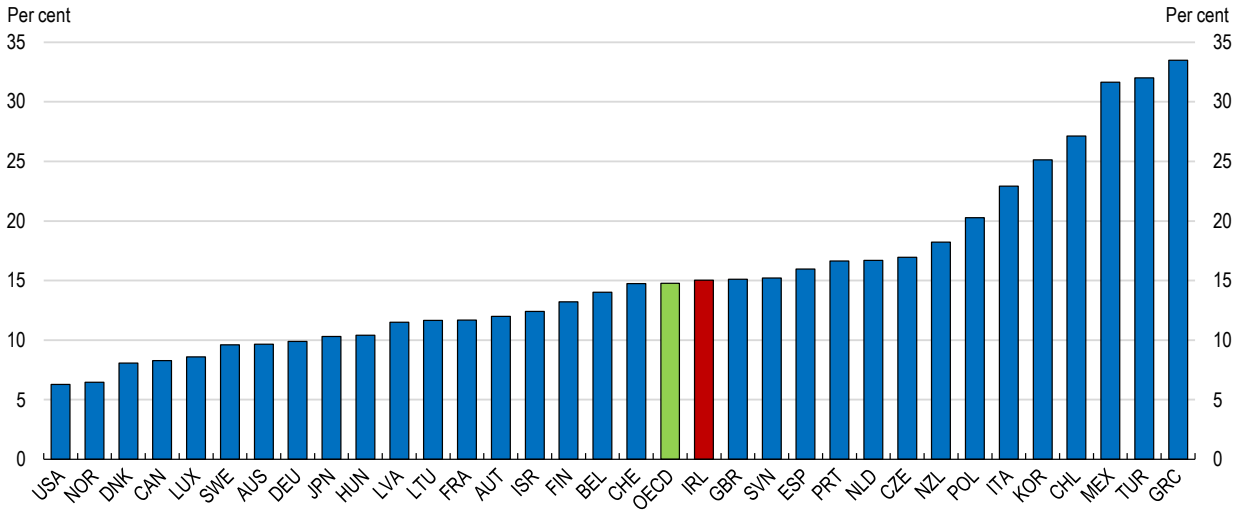
One of the channels through which new technologies will support workers and create new jobs is through the development of online platforms. Digital technologies significantly lower transaction costs, making it easier for firms to outsource tasks, and for individuals to offer and market their services. The recent rapid rise of "gig economy" platforms that use digital technologies to intermediate labour on a per-task basis offers both opportunities and challenges.

As highlighted in the recent *OECD Jobs Strategy*, the significant reduction of transaction costs potentially enhances businesses' productivity while lowering barriers for workers to find jobs (OECD, 2018b). The gig economy enables individuals to compete with firms as entrepreneurs, while enjoying flexibility in their work arrangements. In addition, empirical evidence suggests that gig economy platforms can play a role as a labour market buffer during economic downturns (Schwellnus et al., 2019). The Irish authorities should continue to review regulatory settings that may unduly constrain individuals wanting to join the gig economy from doing so. For example, current regulatory settings have impeded new taxi services such as Uber and Lyft that allow private car owners to offer taxi services in some other OECD countries (Deighton-Smith, 2018). Nevertheless, the lines between dependent employment and self-employment are blurred by the emergence of workers focused on a specific task on an on-demand basis. This poses a challenge to conventional labour market institutions, which were based on stable employer-employee relationships. If contract rules and social protection only cover standard workers, firms have an incentive to economise labour costs by shifting work to nonstandard workers who have less protection. In addition, shifting to nonstandard employment can lead to a decline of overall tax revenue if there is a tax differential between types of employment, which is indeed the case for the Irish social insurance system (see below).

These are important considerations for Irish policymakers, as self-employment as a share of total employment was around the OECD average at 15% in 2018 (Figure 2.27). A detailed study on contingent employment in Ireland estimated that the proportion of freelance workers steadily increased between 1998 and 2016, even though such workers are a minor component of the labour market, accounting for just 2% of total employment and 12% of self-employment (McGuinness et al., 2018). The study projected a continuing rise of the share of freelance workers by one percentage point of total employment by 2025.

Figure 2.27. The share of self-employment in Ireland is around the OECD average

As a share of total employment, in 2018



Source: OECD, Labour Force Statistics database.

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Social protection should be harmonised across different forms of dependent employment

The emergence of gig workers has added importance to the issue of coverage gaps in social protection between dependent employees and the self-employed, which can distort choices around the form of employment and erode the contribution base of the social protection system. Non-standard workers are included in the definition of "employee" in Irish legislation related to the national minimum wage, anti-discrimination and health and safety. Nevertheless, further harmonisation of social protection schemes across forms of dependent employment, including workers in the "grey zone" (i.e. where workers share some characteristics with dependent employees but are classified as self-employed), is required to close the gaps and ensure that the system covers those most at risk.

The most straightforward way to address this issue would be to add the self-employed into the coverage of existing social protection schemes designed for dependent employees. However, such an approach raises a number of issues. *First*, it is unclear who should be liable for employer contributions in contributory systems where employers and employees share the contribution burden – the so-called double contribution issue. *Second*, basing contributions and benefit entitlements on the voluntary tax compliance of self-employed workers may be problematic if such compliance is lacking. This can often be the case for such workers in a context of fluctuating earnings due to payment at irregular intervals, time-lags between work and payment and erratic demand for their services. *Third*, limiting moral hazard of the self-employed in claiming unemployment benefits can be a challenge, given difficulties in determining the difference between a layoff and voluntary idleness and in monitoring job search effort (OECD, 2018c).

A possible alternative is to create a voluntary social protection scheme for the self-employed. However, this may not be practical, as adverse selection can lead to a spiral of rising premiums and falling coverage. In turn, maintaining a high coverage rate could require heavy public subsidies. Another option would be untying social protection from the employment relationship. While this can be done by granting individual entitlements to tax-financed benefits based on need, it would require a comprehensive means test that may be administratively challenging given the difficulty of calculating the income and assets of the self-employed.

Ireland takes the approach of integrating the self-employed into the scheme for dependent employees. The Pay Related Social Insurance (PRSI) allows the self-employed to enrol but with limits on access to benefits. They are only charged employee contributions at the headline rate of 4% or EUR 500 a year, whichever is larger. Consequently, their average effective contribution rate is around 3.7%, well below the 13% for dependent employees (when both the employee contribution and the 8.8%-11.05% employer contribution are taken into account). While the PRSI avoids the double contribution issue, it does so at the expense of taxpayers and the arrangements provide a strong incentive for platform operators to shift employment towards self-employment.

In recent years, PRSI benefits have been extended to the self-employed without any increase in their contribution rate. As a result of the extension of the treatment benefit and invalidity pension in 2017 and provision of weekly jobseeker payments to the self-employed in 2019, such workers now have access to 93% of the PRSI benefits in value terms. To align contributions by the self-employed to their benefit entitlements, it has been suggested that their PRSI contribution rate could be raised by shifting it from an employee to an employer basis (Department of Employment Affairs and Social Protection, 2019).

While shifting the base of the contributions for the self-employed will improve the financial balance of the Social Insurance Fund, the incentive for platform operators to shift their employment to self-employed workers will remain if contributions are fully paid by the workers. In contrast, dependent employment will emerge as the preferred choice for platform workers, as they will be charged employee contributions of 4% instead of the higher employer contributions. Consequently, employment outcomes can depend on the relative bargaining power between platform operators and workers, which tends to be stronger for the former, given the difficulty of effective enforcement of rules to prevent false classification of de facto dependent employment as self-employment. To make the system neutral to forms of employment in the platform economy, the PRSI contribution for freelance workers could be levied at 4% with employers also making some contribution based on the scale of work undertaken.

Labour market regulation must evolve with new forms of work

Extending the coverage of labour market regulations to platform workers in the grey zone is essential to sustain their bargaining position. Rules on work contracts, training provisions, minimum pay and collective bargaining are particularly important.

Rules on transparency of employment contracts, termination of contracts, and mobility of workers are fundamental elements that underpin the bargaining position of workers. The European legislators approved a law in 2019 that applies a set of minimum standards for all workers who work more than 12 hours a month regardless of the form of employment contract. The minimum standards cover:

- Information on essential elements of a work contract to be provided within one week of employment.
- The right to receive compensation in case of late cancellation of the agreed work assignment by the employer.
- A probationary period limited to six months.
- The right to work for other employers, with a ban on exclusivity clauses.
- Access to cost-free mandatory training.

The EU directive has to be transposed into Irish law by 2022. While many elements related to work contracts were already included in the Employment (Miscellaneous Provisions) Act 2018, the directive has a broader definition of workers that covers independent contractors in the gig economy. Although the Act did not include training provisions, *Springboard+*, a cost-free training programme conceived for the unemployed, was extended in 2017 to include among others the self-employed in certain sectors such as biopharma and medical technology and ICT. Ireland should adopt the EU directive in a way that extends

the coverage of the existing set of standards to encompass platform workers who are effectively dependent employees.

Rules on minimum pay help increase income security for platform workers in the grey zone. The definition of an employee is generous in Irish national minimum wage legislation. It includes contracts for service, which is the relevant contract for many digital platform workers. Nevertheless, extending the statutory minimum wage that is based on an hourly rate to cover the grey zone workers may be difficult in practice, as such workers are paid per provided service. Provision of piece-rate minimum pay could be an option, though setting the minimum rate can involve a complex task of assessing output per hour for different types of platform workers. This would require cooperation with platform operators, as access to real time data collected by them would be essential to model, understand and demonstrate how demand for individual jobs at given times translates to an hourly rate (United Kingdom Department for Business, Energy & Industrial Strategy, 2017).

Ensuring the right of collective bargaining would strengthen the bargaining position of platform workers in the grey zone. As in many other OECD countries, the Irish Competition Act had banned collective bargaining of self-employed workers as anti-competitive agreements, decisions and concerted practices. However, the Competition (Amendment) Act 2017 lifted the ban for self-employed voice-over actors, session musicians and freelance journalists. It also provides that a trade union can apply to the Minister for Business, Enterprise and Innovation to permit a collective action of other self-employed workers who fall within certain categories termed ‘false self-employed’ or ‘fully dependent self-employed’ workers. While the onus to show that those workers fall within the relevant definition falls on the trade union making the application, the Minister will not approve the application if the collective action would have more than a minimal effect on competition in the relevant market. The impact of the new mechanism is yet to be seen, as no applications have been made so far. The Irish authorities should closely monitor the effectiveness of the recent amendment of the competition law in supporting the bargaining power of false self-employed and fully-dependent self-employed platform workers.

Beyond extending collective bargaining coverage, the bargaining power of platform workers can also be supported by strong enforcement of competition law (OECD, 2019c). Despite rare enforcement in many jurisdictions, some of the competition authorities including US and Japanese enforcers have recently made labour markets the object of their focus (OECD, 2019e). In particular, the Japanese Fair Trade Commission published in 2018 a report on the application of the Antimonopoly Act to trades between independent contractors and their clients. The report provided guidelines on concerted practices including agreements related to rewards and switching jobs as well as on unilateral conduct such as non-compete or exclusive obligations and restrictions on uses of output produced through service provision (Japan Fair Trade Commission, 2018). In addition to improving worker’s wellbeing, such measures may benefit the performance of the aggregate business sector. For instance, it may lessen the ability of incumbent firms to restrict worker mobility and, hence, the efficient allocation of labour resources (OECD, 2019c),

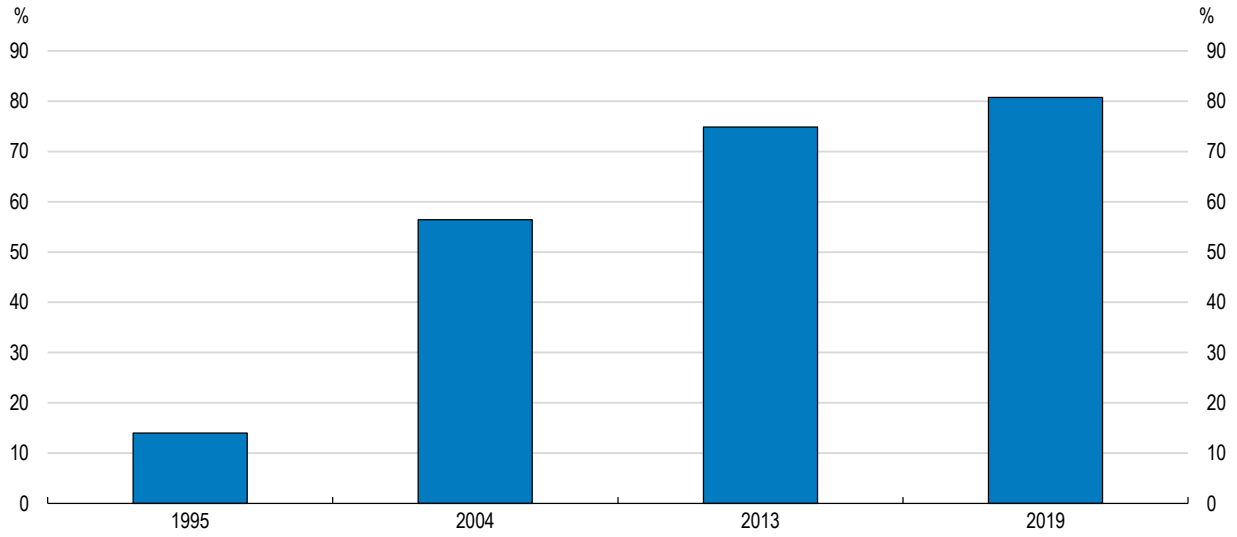
Greater residential mobility is needed as the geography of growth evolves

Housing and infrastructure policies should support agglomeration

As noted earlier, Dublin has experienced particularly strong growth in economic output over the past decade (Figure 2.3; Morgenroth, 2018). At the same time, Dublin’s share of total employment has risen. Nevertheless, there has been considerable outward migration from Dublin during the period, leading to long commutes (Box 2.4). This reflects escalating dwelling price premiums (Figure 2.28) that have deterred potential residents (Garcia-Rodriguez and Morgenroth, 2017). The authorities must ensure that housing-related policies allow for agglomeration in those geographic areas that have the highest potential for economic growth.

Figure 2.28. The Dublin dwelling price premium has been rising

Premium of dwelling prices in Dublin relative to other Irish areas



Note: For the 1995 and 2004 bars, the ratio of the price of second-hand dwellings in Dublin to new dwellings in other areas is used. For 2013 and 2019, the data takes account of the mix of properties to make like-for-like comparison between Dublin and other areas.
Source: Lyons and Westmore (2020).

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As documented in the *2018 OECD Ireland Economic Survey*, the surge in dwelling prices in popular locations, such as Dublin, can be mainly ascribed to low housing supply. Price developments in Dublin have been strongly associated with the availability of housing over the past decade (Figure 2.31). Along with residential mobility patterns, there have been adverse implications for the wellbeing of some vulnerable groups. The number of homeless adults in Dublin rose by around 50% between September 2016 and September 2019.

Box 2.4. Dubliners are moving outside

The share of Irish people living outside their county of birth has gradually increased in recent decades. This trend has been driven by a rising proportion of those born in Dublin now living in nearby counties (Figure 2.29).

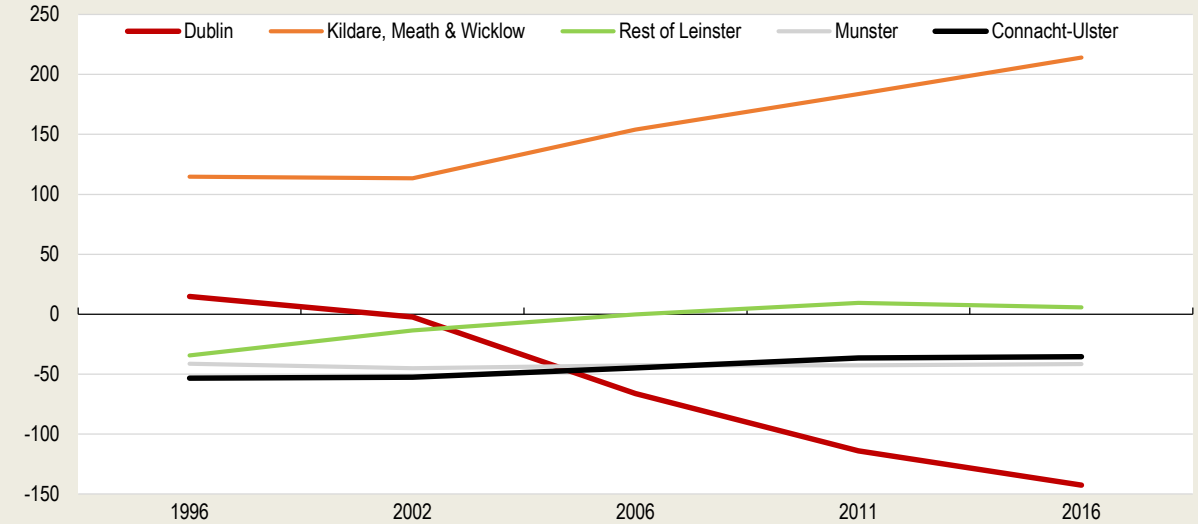
In 1996, Dublin was home to around 15,000 more people than the total number of Dublin-born people resident in Ireland. This marked Dublin as a destination county for internal migrants. However, by the time of the 2016 Census, the resident population of Dublin was close to 150,000 lower than the total number of the Dublin-born living in Ireland. Census data highlights that Dublin residents increasingly moved away from Dublin over the period, largely to the neighbouring counties of Kildare, Meath and Wicklow.

This net internal outflow from Dublin county even as Irish economic activity became more concentrated in the area has meant that many people now working in Dublin live in other counties. In 2016, the most densely populated 20% of Irish electoral divisions accounted for 84% of jobs but just 66% of homes (Lyons, 2019). The movement out of Dublin has resulted in long commutes for an increasing proportion

of the population. While around 15% of the population faced a long commute in 1981, this had risen to close to 45% of people by 2016 (Figure 2.30).

Figure 2.29. Dubliners have been moving to contiguous counties

Difference between resident population and the population born in county and currently located in Ireland, '000



Source: Lyons and Westmore (2020).

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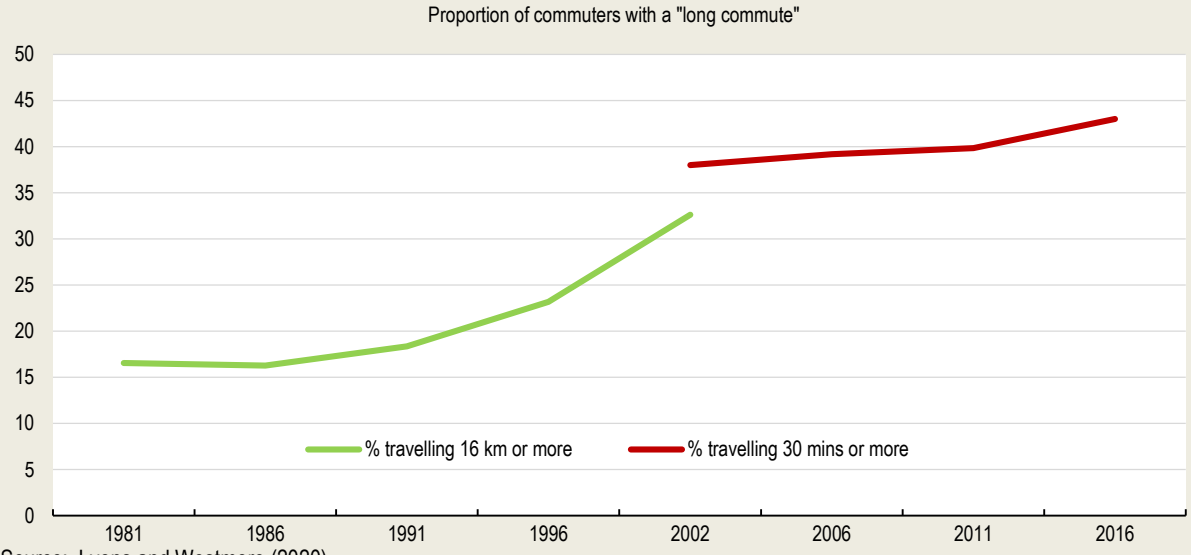
Figure 2.30. Many now face a long commute



Source: Lyons and Westmore (2020).

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To meet the future needs of the growing Irish population, the capacity of the housing construction sector will need to continue expanding to avoid dwelling supply constraints and a further acceleration in prices (McQuinn, 2018). Key to achieving this will be promoting the efficiency of Ireland's construction sector. Compared with European peers, productivity growth in the Irish construction industry is low, remaining

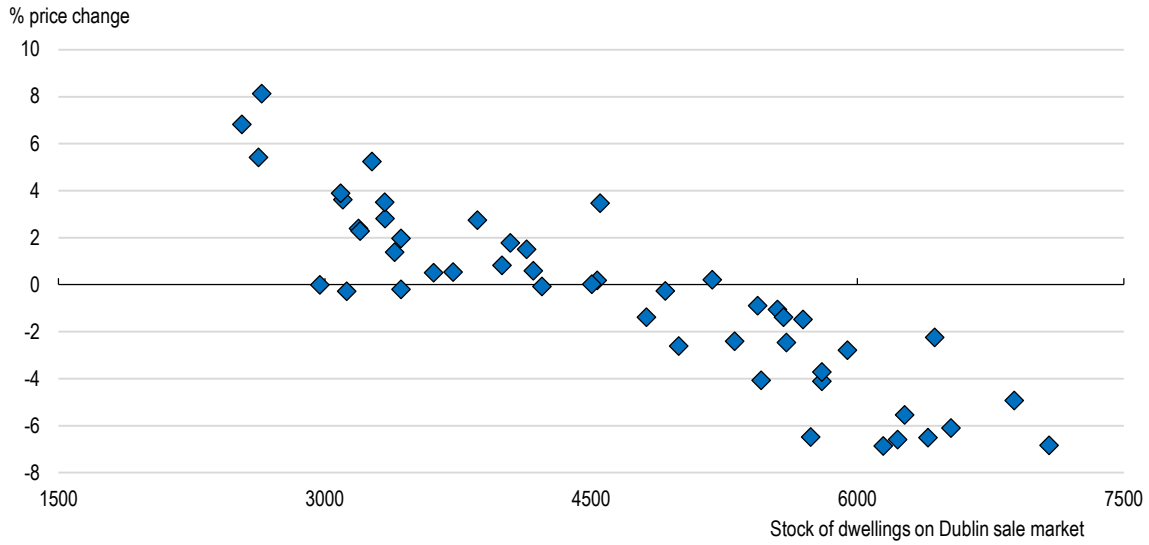
around 10% below the level of labour productivity in 2010 (Government of Ireland, 2019b). It will also be important that appropriately-sized dwellings in the right locations are being built. Just 12% of dwellings in Ireland are apartments, compared with around half in the European Union at large, even though over half of Irish households comprise just one or two people. In Dublin, less than 30% of dwellings are apartments, compared with over 60% in other major cities in Europe.

The dwelling stock in Dublin and other vibrant economic areas should expand to absorb rising numbers of workers without requiring them to endure long commutes. As digital adoption advances, teleworking practices should also be further encouraged; telework rates in Ireland are above the European Union average but well below some countries, such as those in Scandinavia (Eurofound, 2018).

Several policy areas are critical for ensuring flexible dwelling supply in cities, including the availability of local infrastructure, zoning provisions and the extent of brownfield land development. The authorities have presented a long-term strategy for Ireland's development, *Ireland 2040,* that includes a National Planning Framework which is the overarching spatial development vision for Ireland. Acknowledging that urban sprawl is excessive in Ireland, the framework targets at least 50% of new future housing to be provided within the existing built-up areas of cities. It also emphasises the need to pro-actively develop infill, brownfield, and publicly-owned sites as well as to make better use of vacant and under-occupied buildings in urban areas. For managing the State's own lands to develop new homes, the Land Development Agency has been established. An independent Office of the Planning Regulator was also set up to ensure that the zoning and planning decisions of local authorities are aligned with the strategy and that planning systems are functioning in a coherent way.

Figure 2.31. Dwelling prices reflect supply conditions

Dwelling stock for sale in Dublin on first day of quarter and subsequent dwelling price change 2006-19



Note: Data are based on the stock of dwellings advertised on the daft.ie online platform.
Source:daft.ie.

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The new institutions should be coupled with policy settings that are more conducive to new home building. The *2018 OECD Ireland Economic Survey* argued that a land tax, levied on the unimproved value of a site, would encourage more efficient land use. With hardly any distortionary effect on the investment decisions of households and businesses (Blöchliger, 2015), such a levy would reduce the hoarding of land in anticipation of capital gains and incentivise governments to regularly reassess the use of publicly-owned

land. Such a tax could replace some of the existing levies on market property values such as stamp duty and commercial rates that may have notable distortionary impacts on the pattern of firm growth and the reallocation of labour (OECD, 2018a). It would also have broader scope than the existing vacant site levy, as it would capture those sites where structures exist but are not using the land in the most efficient way.

Increasing the residential capacity of new growth areas must be accompanied by initiatives that allow public infrastructure to cope. Dublin roads are some of the most congested in the world (Tom Tom Traffic Index, 2019), underlining the importance of various Ireland 2040 projects that enhance public infrastructure, such as bus corridor upgrades and new and expanded rail lines. The introduction of congestion charging in the busiest areas would promote the use of public transport and the deferral of non-essential trips. At the same time, new modes of shared transport should be encouraged and any regulatory settings that would unnecessarily impede their development reviewed. Modelling suggests substantial reductions in traffic congestion and CO_2 emissions from vehicles if 20% of private car trips in Dublin were replaced by shared transport modes (Box 2.5). Such a system would depend on widespread technological diffusion though, as services would be coordinated by a digital platform that optimises routing.

Box 2.5. Digital-based ride sharing in Dublin

Recent modelling by the International Transport Forum highlights the valuable role that digital-based ride-sharing solutions could play in reducing traffic congestion, CO_2 emissions and pollution in Dublin (International Transport Forum, 2018). The study used data from the Census and the Household Travel Survey as well as a web-based survey of potential shared transport users. The results suggest that if 20% of private car trips in Dublin were replaced with shared modes, emissions and traffic congestion would fall 22% and 7% respectively. Shared mobility would also result in better access to opportunities for citizens, especially for inhabitants of areas not well-connected to public transport.

Under such a ride-sharing model, individual private car rides are replaced by rides in shared taxis or shared taxi-buses. These services are modelled to be available on-demand either at the doorstep or at the next street corner. Supply and demand of on-demand services are coordinated by a digital platform which optimises the routing. The modelling results suggest that shared rides could complement existing modes of public transport. Shared rides could feed railway stations, substituting some inefficient bus lines. Survey results suggest that 20% of car drivers would be willing to switch to shared rides, although this share would be higher if more information about the ride-sharing system or incentives were provided.

The large size of the Greater Dublin area with dispersed demand makes it difficult to provide public transport for the region efficiently. Even for on-demand taxi-buses, demand would be insufficient along some routes. To remain efficient, shared mobility services in these areas could be delivered by using vehicles with fewer seats (i.e. the “shared taxis”). This would still improve mobility at an affordable cost. The environmental benefits of this shift in transport modes could be amplified if shared services were provided using vehicles powered by electricity or, in regions characterised by longer trips, other alternative fuels such as natural gas.

A more ambitious arrangement that shifted all private car travel in Dublin to shared mobility services and the existing rail and light-rail transport network could result in even more dramatic results. Under such a scenario, CO_2 emissions from vehicles and traffic congestion would fall 38% and 37% respectively.

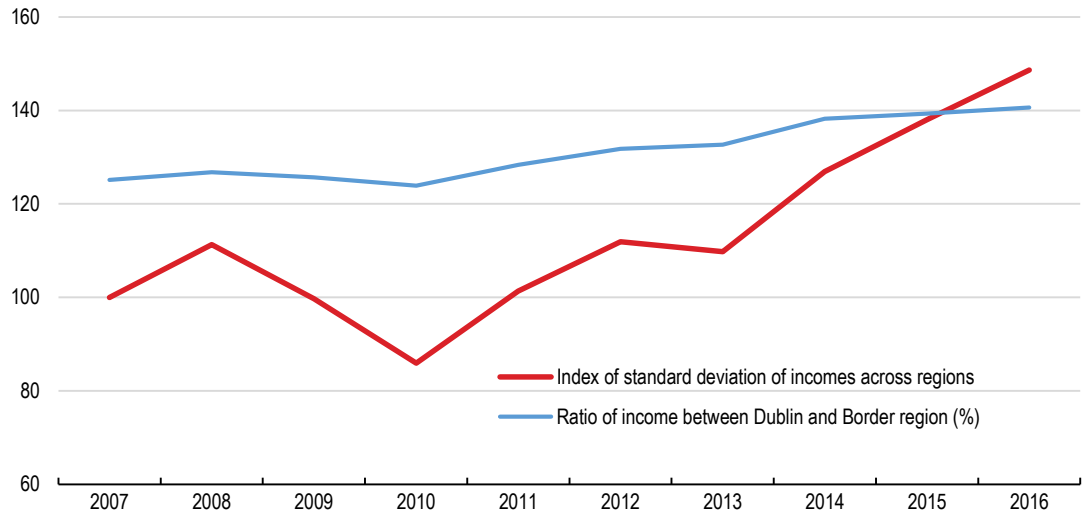
Regional inequality must be carefully monitored

An increasing concentration of economic activity in relatively wealthy parts of the country, such as Dublin, is prompting concerns about rising regional inequality. Over the past decade, income disparities across

Irish regions have risen along with the income gap between the leading (Dublin) and lagging (Border) regions (Figure 2.32). Projections over the period to 2040 suggest that further economic divergence is in prospect, with jobs growth in Dublin expected to be particularly strong relative to the rest of the country (Morgenroth, 2018). At the same time, potential negative effects from job automation are expected to be mostly felt in towns outside of Dublin, many of which already have relatively low per capita income (Crowley and Doran, 2019; Doyle and Jacobs, 2018).

Figure 2.32. Regional inequality has been rising

Measures of regional income disparity



Note: Both measures in the figure are calculated based on disposable income per capita by Irish region. Calculations are based on data from eight Irish regions; Border, Midland, West, Dublin, Mid-East, Mid-West, South-East, South-West. Dublin is the leading region and the Border is the lagging region in each of the years across the 2007-16 period.
Source: CSO, OECD calculations.

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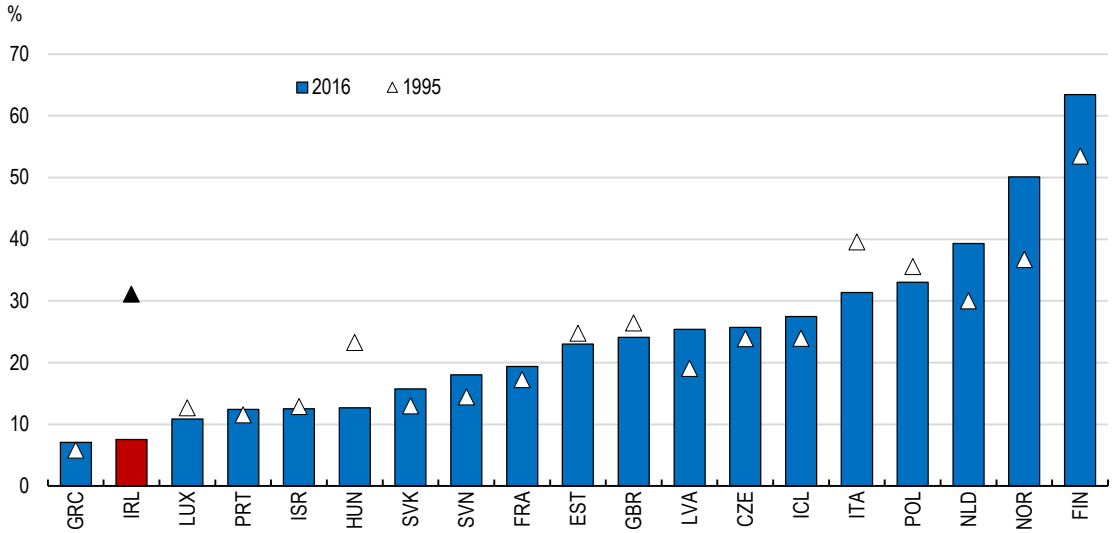
Looking forward, it is important to encourage economic activity outside of Dublin and the East of Ireland. Second-tier Irish cities are small, at around two-thirds the size of equivalently ranked cities in Denmark (Morgenroth, 2018). Developing scale in the second-tier cities will improve their competitiveness and reduce the cost of providing infrastructure (Hortas Rico and Sole-Olle, 2010). Furthermore, strong economic growth in these areas will have positive spillovers on other counties in the region, making for a strong regional hub around which nearby firms can organise their economic activities. Given budget constraints, public infrastructure spending should be focused on building capacity within second-tier cities rather than spending on motorways and other infrastructure between them that may encourage further urban sprawl.

Some of the *Ireland 2040* projects aim at increasing urban density and more compact rural settlements. The specialisation of strong economic poles outside of Dublin should reflect regional endowments and related comparative advantages. Moreover, local stakeholders should be empowered to drive bottom-up initiatives that support local economic development and provided adequate powers and resources to do so. Ireland is now a highly fiscally centralised country; while local government spending accounted for above 30% of total government spending in the mid-1990s, it now accounts for less than 10% (Figure 2.33).

Figure 2.33. Local governments have little spending power

Proportion of total government spending undertaken by local government



Source: OECD Fiscal Decentralisation database.

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Continuing to promote the accumulation of the right skills in these regions to complement emerging high potential activities has been a recent focus of policymakers. As detailed earlier, Ireland performs well in aligning learning provision to labour market needs. This has been partly achieved through the establishment of nine Regional Skills Fora in 2016 that facilitate cooperation among stakeholders to identify the emerging skill needs in each region and to develop effective learning programmes to meet them. In particular, the institutions have strong dialogue with local businesses for both planning new courses and directing them to relevant training opportunities. A challenge remains convincing employers to release workers to participate in training courses identified as relevant by the Fora. This is especially the case in smaller locally-owned enterprises where the absence of one worker can significantly impact operations. A first step should be to increase the prominence of evaluations, highlighting those programmes with the greatest benefits in terms of firm performance. These should serve to communicate with the management of small businesses.

Competition and digital security policies need to be revisited amid ongoing technological progress

New technologies may affect competitive dynamics

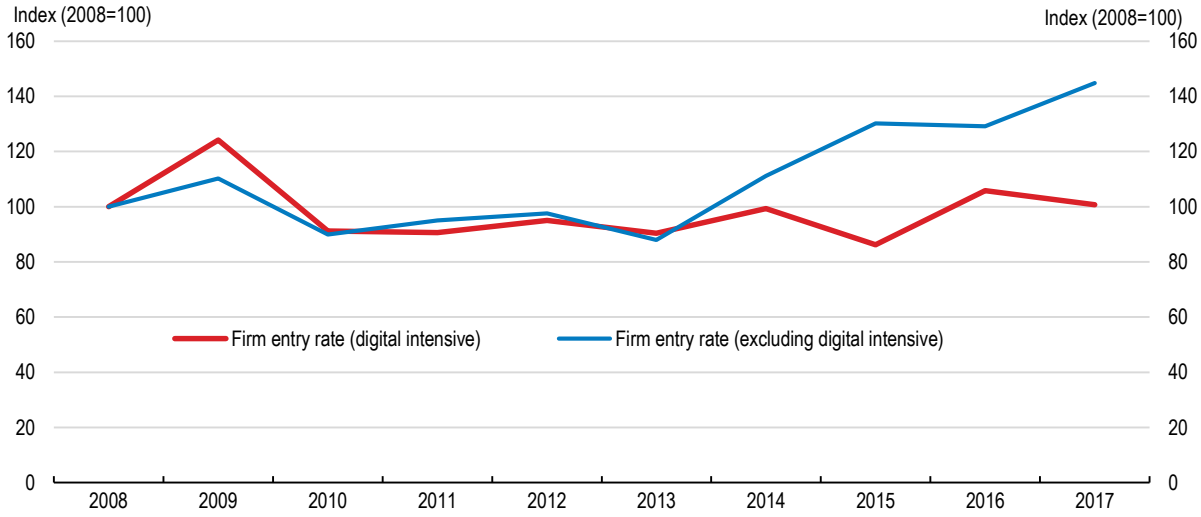
Increased technological intensity is changing business models. In turn, market structures are mutating, with implications for competition policy settings. A healthy competitive environment is key for promoting innovation and its diffusion. This process can maximise the benefits of new technologies to firms and citizens, raising aggregate wellbeing. Nevertheless, the emergence of new technologies, especially in the digital sphere, has prompted some concerns about the implications for market power and data protection.

The increasing role of digital technologies has the potential to be competition-enhancing. For instance, the Internet has facilitated the entry and growth of digitally based firms that do not need a physical presence in all markets in which they sell (OECD, 2019a). Nonetheless, there are several unique features of digital markets that may lead to market power, which, if entrenched, could result in higher prices and lower choice

for consumers. Many digitally-intensive sectors are characterised by: i) substantial network effects in platform markets, meaning that the value to customers of a platform increases with the number of users; ii) high fixed costs and low variable costs, so that there are significant economies of scale and potential financial barriers to entry; and iii) data from users being an important competitive asset for incumbents.

These attributes can create "winner-takes-most" dynamics, whereby a small number of firms obtain dominant positions in digital markets. Even in relatively low-tech industries (e.g. accommodation, food services), the increasing availability of online user reviews tend to shift demand towards a small number of firms. Empirical evidence suggests that enhancing contestability of the platform economy is essential to fully reap the potential benefits from platform growth (Rivares et al., 2019). While online platforms have substantial benefits for consumers and increased market concentration is not necessarily a bad thing, policymakers must ensure that incumbents do not defend dominant positions through anticompetitive conduct. One concerning feature of the Irish economy in this regard has been the divergence in firm entry rates between those sectors characterised by high digital intensity and the rest of the economy (Figure 2.34). Between 2013 and 2017, the aggregate firm entry rate (i.e. firm births as a proportion of total active enterprises) rose steadily. This coincided with policy reforms aiming at promoting entrepreneurship, such as the launch of the Capital Gains Tax Entrepreneur Relief Programme, which provided for a reduced capital gains tax rate of 10% for entrepreneurs, and the introduction of an online facility for business registration. Nevertheless, the firm entry rate for those sectors with a high level of digital intensity stayed basically flat through the period.

Figure 2.34. Firm entry rates have been weaker in digitally-intensive sectors



Note: "Digital intensive" sectors are defined using the taxonomy outlined in Calvino and Criscuolo (2019). Firm entry rates are calculated based on the unweighted number of entrants in each period.
Source: CSO, OECD calculations.

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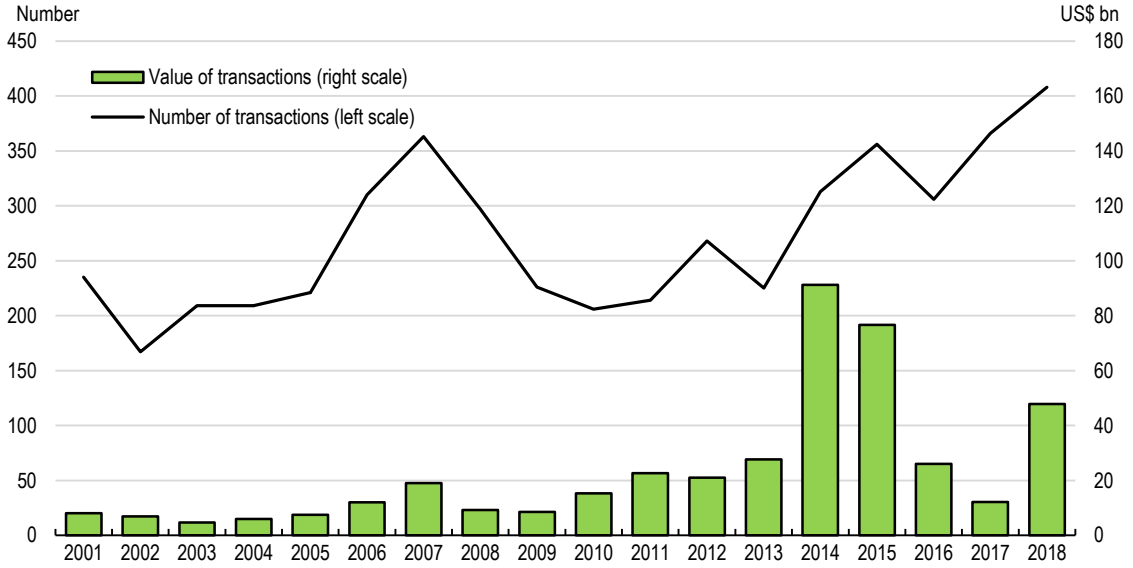
A rising number of mergers and acquisitions in the Irish economy could also signal diminishing competitive dynamics in certain markets (Figure 2.35). In the past five years, the average annual volume of mergers and acquisitions has been over one third higher than in the 2000-2009 period. A high proportion of this activity has been occurring in digitally-intensive sectors, with the volume of mergers and acquisitions in the most technologically-intensive sectors having doubled between 2009 and 2017 (William Fry, 2019). While mergers and acquisitions can benefit productivity through lowering costs or better allowing economies of scale, they may also lead to competition problems, for example when smaller innovative firms are acquired by large incumbents to prevent them from growing into potential competitors. The growth of some of the

largest global digital companies has been enabled by aggressive merger and acquisition activity: the largest five digital firms worldwide have made over 400 acquisitions in the past decade (United Kingdom Digital Competition Expert Panel, 2019).

Figure 2.35. Corporate mergers and acquisitions have become more common

Annual mergers and acquisitions



Note: To partially control for inflation in company valuations, the value of transactions is deflated by an index of modified nominal gross national income.

Source: Institute for Mergers, Acquisitions and Alliances.

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Policymakers must take steps to ensure that any emerging risks for competition resulting from new technologies are carefully managed. The activities of competition authorities will be important, especially by ensuring that enforcement powers are adequate to deal with the changing landscape. Unlike relevant authorities in most European countries, the Irish Competition and Consumer Protection Commission does not have the power to fine companies for non-criminal breaches of competition law. Allowing the imposition of financial sanctions would align with the recent directive of the European Union (European Union, 2019). However, transposing the directive may be complicated by the prohibition in the Irish constitution of penalties in civil cases that are essentially identified with criminal charges. Insofar as the constitution allows it, sanctioning powers against non-criminal breaches of competition law should be provided to the Irish Competition and Consumer Protection Commission. Doing so will further deter businesses considering anticompetitive behaviour.

There may also be a case for the competition authority considering additional merger notification thresholds to ensure that anticompetitive acquisitions do not go unscrutinised. In response to the acquisition activity of large digital firms, Germany and Austria are experimenting with merger notification thresholds based on transaction value rather than the revenue of the participating firms. This seeks to capture mergers or acquisitions of small high-potential firms that may be in the early years of operation and do not have substantial revenues.

In addition, the assessment of mergers in dynamic digital markets will require the Competition and Consumer Protection Commission to focus on innovation, non-price competition (particularly when products are offered to consumers at a zero price) and the multi-sided nature of digital platform markets

(OECD, 2018d). This can lead to significant technical challenges and may require the adaptation of analytical tools. Ensuring sufficient economic expertise within the Commission will be crucial.

It may be that the traditional regulatory framework needs to be revisited in light of emerging digital technologies. New regulatory functions or institutions may even be needed to govern these markets in the most efficient way. The pace of antitrust enforcement may also need to be accelerated given the speed with which digital markets evolve, for example through the use of interim measures. Recent government reports on digital competition policy in Australia, the EU and the United Kingdom have identified a range of additional measures to address the competition issues arising from digitalisation. These include stronger enforcement procedures, such as shifting the evidentiary burden to dominant firms in some cases. Further, regulatory measures could enhance competition in digital markets, for example with rules promoting data mobility and open standards (Box 2.6).

The Irish authorities should continue to monitor the impact on competition of the diffusion of new technologies. Doing so will allow Ireland to play an ongoing role in developing new regulations at EU level and to identify the need for any necessary domestic policy adjustments in addition to the EU standards. To enable this, the competition authority should be active in conducting relevant analysis and participating in market studies that help illuminate any competition problems in Ireland's digital markets that may be arising outside the framework of enforcement action.

Box 2.6. The United Kingdom Digital Competition Expert Panel Report

In March 2019, the Digital Competition Expert Panel in the United Kingdom published its report "Unlocking digital competition". The group was appointed by HM Treasury to examine the potential opportunities and challenges the emerging digital economy may pose for competition.

A key recommendation from the review was for the establishment of a digital markets unit. By nature, digital markets can be very dynamic, and harmful behaviours in these markets very complex (both to assess and remedy) and unique to the specific situation. In this context, in addition to traditional competition policy, a regulatory body that has dedicated expertise on digital matters and capacity to swiftly investigate and resolve matters may be needed.

The report envisaged that the unit would have three main functions backed by new legislation. It would:

1. **Develop a code of conduct**.

   This would be created in coordination with all stakeholders in digital markets, but only apply to companies with "strategic market status", to avoid excessive regulatory burden. Large digital platforms, for example, would be covered. The code would be formed around a set of core principles that ensured business users are: i) provided access to designated platforms on a fair, consistent and transparent basis; ii) provided with prominence on designated platforms on a fair, consistent and transparent basis (e.g. in instances where a platform contains a search function that generates results); iii) not unfairly restricted or penalised as a result of utilising alternative platforms or routes to market.

2. **Enable greater personal data mobility and systems with open standards**.

   It is desirable for consumers to be able to request that the data a business holds relating to them be directly shared between a business and third party. This would enable consumers to switch more easily between digital platforms, manage their data held across digital platforms in one place or allow them to make a choice to share their data in exchange for some benefit. The extent of personal data mobility could involve any such data, though careful consideration is warranted where businesses have invested in collecting observed or inferred data.

Systems with open standards are those built using technical specifications that are agreed in common and freely available. They should enable interoperability, compatibility and consistency across services. Such standards can enable innovators to build new propositions which compete directly with existing ones or ancillary services based on existing systems, bringing about a host of new opportunities. An example of a closed system is many internet-based messaging services whereby users can only message their contacts who have accounts with the same messaging provider. The digital markets unit should be given powers to require systems to build on open standards, if it determines that approach to be best.

3. **Use data openness as a tool to promote competition**.

   Greater data openness could reduce barriers to entry into digital markets and promote innovations by third parties. Nevertheless, powers that allowed the digital markets unit to require the opening up of a part of a business's legitimately obtained data to potential competitors should be exercised with caution. Doing so would need to be coupled with privacy safeguards and consideration of the impact on incentives of investment in future data collection and management by businesses.

Source: United Kingdom Digital Competition Expert Panel (2019).

Buttressing digital security is an ongoing priority

Data have become a core input to innovation and policies need to evolve to address data access issues. A general principle is that data access policies should ensure the broadest possible access to data and knowledge so as to favour competition and innovation, while respecting constraints regarding data privacy, ethical considerations, economic costs and benefits, and intellectual property rights (OECD, 2019f). The potential of the digital economy can only be realised if participants, including consumers, trust that their data will be responsibly safeguarded.

In May 2018, the EU General Data Protection Regulation came into effect. The regulation harmonises data protection legislation in the European Economic Area countries and gives greater rights to individuals in determining how their data is used. The regulation requires that data be collected and processed transparently, be held for the minimum time necessary and gives a data subject the right to request that a data controller erases their personal data.

Although the General Data Protection Regulation legislation enshrines some data portability rights, it does not have explicit requirements for parties to develop technical standards to facilitate data transmission and there is no requirement that data portability be possible on a continuous, rather than discrete, basis. The authorities should consider introducing these additional requirements.

The Irish authorities are at the centre of enforcing the EU General Data Protection Regulation. This is because the regulation stipulates that the lead regulator be the data protection commission in the country where the relevant firm has their data controller. Given that the European headquarters of many of the largest technology companies in the world are in Ireland, the Irish Data Protection Commission now has a significantly enhanced responsibility in enforcing the proper use of the data of individuals from across Europe. This duty should be diligently performed. The Commission has already expanded in light of these new responsibilities, but it must continue to be allocated adequate resources to properly enforce the legislation.

Digital security is also becoming more important as the value and volume of data rise. Digital security incidents, for both organisations and individuals, are increasing in sophistication and impact (OECD, 2018e). The constantly evolving nature of digital ecosystems means these risks cannot be eliminated entirely, but an institutional setting should be established in which they are best managed.

The Irish government published a Cyber Security Strategy in 2015, which was updated in 2019. This was designed to build the capability of the National Cyber Security Centre, the primary cyber security authority in the State. In recent years, the centre's capacity and resources have expanded and its roles have been formally established in law. A key challenge remains the availability of workers with strong cyber security skills that can effectively monitor and enforce actions against new risks. The Cyber Security Skills Initiative was launched in October 2018 to address such skills gaps. The programme will provide 5,000 IT professionals across 4,000 companies with training in cybersecurity. This is a worthwhile initiative that may be needed on an ongoing basis as long as there is a shortfall of cyber security skills. Many of the benefits of reducing cyber security risks will accrue to businesses, so the financing of such courses should be shared between the public and private sectors.

Tax policy settings also need updating

As technological change enables new business models to develop, taxation systems will need to adjust accordingly. New technologies may bring significant benefits to tax administrations. An increased propensity for previously unreported economic activities to take place via online platforms could help in detecting under-reporting, tax evasion or tax fraud. This is especially the case when combined with advances in data storage capacity and the analytical techniques of taxation agencies (OECD, 2019g). Taxpayers can also benefit, through the introduction of online channels of communication and the pre-filling of tax returns. For many years Ireland has had a Revenue Online Service for taxpayers, which should continue to integrate new features that become possible with further technological advances.

Concurrently, new technologies create tax policy challenges. Digital technologies may enable enterprises to be active in an economy without having a significant physical presence. This raises important issues related to the allocation of taxing rights between jurisdictions and the determination of the relevant share of multinational profits subject to tax in a given place. Furthermore, tax administrations may struggle to identify the parties or payment amounts of transactions undertaken via online peer-to-peer platforms when the platform operator is not located in the same tax jurisdiction.

To confront these challenges, international tax policy coordination is essential. The OECD recently proposed new arrangements to ensure large and highly profitable multinational enterprises, including digital companies, pay tax wherever they have significant consumer-facing activities and generate their profits. Under the proposal, countries would have some power to tax companies that operate within the domestic economy, irrespective of whether they have a physical presence. After a period of stakeholder consultation on the proposal, the aim is for a consensus-based solution to be ready for political agreement in the first half of 2020 (OECD, 2019h). Ireland should continue to be an active participant in these multilateral discussions given the many multinational enterprises that have a significant physical presence in the country.

Policy recommendations for promoting technological diffusion and managing the associated policy challenges

MAIN FINDINGS	RECOMMENDATIONS (key recommendations in bold)
Promoting further technological diffusion to boost productivity growth	
Use of digital government services is relatively low and the intangible capital intensity of public administration has declined.	Introduce the "digital postbox" system and develop new digital government services that improve citizens' interactions with public administration.
Intellectual property enforcement is hampered by high legal service costs.	Introduce inter-professional cooperation in the provision of legal services.
Promoting greater business dynamism is key to encouraging the uptake of new technologies. Regulatory burdens on start-ups are relatively onerous, due to complex regulatory procedures and the system for licenses and permissions.	**Monitor business licensing requirements and the systems that facilitate them, including by linking more licensing procedures with the Integrated License Application Service.**
Young small enterprises face financing constraints to investing in new technologies. The cost of borrowing is substantially higher for smaller firms in Ireland than in other European countries. This is partly due to a lack of competition in the lending market.	Help overcome market failures by broadening and focusing public lending programmes on small and medium enterprises with a high share of intangible assets and innovative business models. Encourage the emergence of alternative online sources of finance, while paying close attention to consequences for financial stability and competitive dynamics in the lending sector.
Accumulating the right skills for a technologically rich world	
Participation in lifelong learning by adults is low.	**Enhance financial assistance for training programmes for young workers. More actively establish and promote distance learning programmes.** **Couple adequate public financial support for childcare with measures to expand childcare capacity.**
Investment and provision of employee training by businesses is insufficient.	Consider introducing a cost-reimbursement element to the National Training Fund levy, whereby firms pay a levy but can claim back incurred training costs.
Supporting workers to transition to jobs in new growth areas	
In some sectors at high risk of automation, intangible capital investment has displaced jobs.	Publicly fund training programmes tailored to employees in enterprises with a high probability of dismissing workers in the near future due to technological change.
Robust data collection is key to effectively assist welfare recipients find a job and to evaluate job search assistance programmes.	Ensure statistical profile models of welfare recipients are using complete and updated data. Begin publishing information about job search assistance activities such as the number of referrals, number of engagements, number of workshops, average caseload per case officer.
Seizing the opportunities and addressing the challenges of the gig economy	
Gaps in the coverage of social protection and labour market regulations between dependent employees and self-employed workers can distort choices around the form of employment, erode the social protection base and undermine the bargaining position of platform workers.	**Require those freelance platform workers who are effectively dependent employees to pay a Pay-Related Social Insurance premium equivalent to that paid by dependent employees and introduce an employer contribution.** Prioritise implementation of the EU Directive 2019/1152 to extend the coverage of minimum standards for workers and cost-free training to all forms of dependent employment. Consider reinforcing the minimum pay rules for platform workers in the grey zone who perform specific tasks on an on-demand basis, including the introduction of a piece-rate minimum pay. Ensure the right to collective bargaining for certain categories of self-employed platform workers (i.e. fully-dependent self-employed and false self-employed) by closely monitoring the impact of the recent competition law amendment.
Facilitating residential mobility to accommodate structural changes	
Dublin has seen net emigration to other parts of Ireland even as its economic importance grew, partly due to a lack of housing supply.	Replace some of the existing property levies, such as stamp duty, with a recurrent land tax to encourage more efficient land use.
The external costs of individual motor vehicle use, including air pollution and congestion, exceed vehicle and fuel tax levels, especially in urban contexts. Dublin roads are some of the most congested in the world.	Continue to invest in public transport, and consider further promoting digital-based ride sharing and the introduction of congestion charging.
Updating competition and data security policies in response to the emergence of new technologies	
Unique features of digital markets, including substantial network effects, may be negatively impacting competitive dynamics.	**Give the Irish Competition and Consumer Protection Commission adequate enforcement powers to fight anti-competitive behaviour, including the capacity to impose sufficient penalties on competition law**

	infringements to ensure a deterrent effect.
The number of mergers and acquisitions in the most technologically-intensive sectors has doubled in the past decade. There is a concern that the acquisition of some young high-potential firms with low revenues is not always given proper scrutiny by the competition authorities.	Consider alternative merger notification thresholds such as those based on transaction value rather than the revenue of the participating firms.
The Irish Data Protection Commission is integral to enforcing the EU General Data Protection Regulation given the many large technology companies that have their headquarters in Ireland.	Ensure that the Irish Data Protection Commission continues to have adequate resources to rigorously enforce the EU General Data Protection Regulation.

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The Irish economy has continued to expand strongly, consolidating its post-crisis recovery. Nonetheless, uncertainty remains elevated and legacies of the financial crisis continue to threaten economic resilience. Fiscal prudence is required, given rising fiscal costs from ageing, emerging capacity constraints and international tax policy changes that could weaken tax receipts. The authorities should broaden the property tax and Value Added Tax bases, ensure environmental costs are better reflected in prices and improve the governance around public spending, particularly in healthcare. At the same time, technological change is transforming the Irish economy, leading to new jobs and innovative products that benefit consumers. Further technological adoption by firms will boost productivity if complementary skills in the workforce are cultivated. There is significant scope for greater participation in lifelong learning, which should be encouraged through well-targeted training programmes and ensuring individuals are able to take part, for instance by expanding childcare supply. To ensure the benefits of technological progress for the economy are fully realised and shared, policy settings in other areas, such as competition and the labour market, also need to be revisited.

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