Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem

QB3 – July 2019

Signed Article

Employment Growth: Where Do We Go From Here?

Contents

Employment Growth: Where Do We Go From Here? 3

Abstract 3

1. Introduction 4
2. The Importance of Employment in the Economy 6
3. Characteristics of the Recent Employment Expansion 8
4. Domestic Sources of Employment Growth Going Forward . 17

Non-Employment Index 18

Labour Force Participation 20

5. External Sources of Employment Growth Going Forward ... 24
6. Conclusions 27

References 29

Employment Growth: Where Do We Go From Here?

Stephen Byrne and Tara McIndoe-Calder[1]

Abstract

The improvement in the Irish labour market since late 2012 has been remarkable. Unemployment has fallen towards 5 per cent, while the number of persons employed in the state has now surpassed it pre-crisis peak. Using detailed microdata from the CSO's Labour Force Survey, we suggest that decreases in unemployment and increased labour force participation will not be sufficient to support employment growth at current levels over the short to medium term. As such, strong net inward migration will be the most important source of employment growth if the economy continues to grow at the rates seen over the last number of years.

[1] Irish Economic Analysis Division. The views expressed in this article are solely our own, and do not necessarily reflect the views of the Central Bank of Ireland. We would like to thank Mark Cassidy, John Flynn, Reamonn Lydon, Terry Quinn, Mícheál O'Keeffe, Thomas Conefrey and David Cronin for comments on an earlier draft. We also thank Jim Dalton and Edel Flannery from the Central Statistics Office for significant help with the data. All remaining errors are our own.

1. Introduction

Since early 2014, the Irish Economy has exhibited particularly strong growth in employment. As a result, the unemployment rate, which reached 16 per cent in 2012Q1, has fallen to 5.0 per cent according to the latest data for the first quarter of 2019. The labour force participation rate (LFPR) is now 62.5 per cent, similar to levels seen during the early 2000s and in line with other European and North American countries. Net inward migration, which was a major feature of the Irish labour market during the period from 2004 to 2007, increased to 34,000 in 2018, the third consecutive year of strong gains.

In this paper, we assess the extent to which the economy can sustain employment growth in the short to medium term without generating wage and price pressures. We show that conditions in the domestic labour market are now consistent with full employment,[2] and that sustained increases in net inward migration will be needed in the coming years to ensure that growth will be not impeded by labour supply constraints.

Typically, employment growth at or above the "full employment" level is accompanied by strong growth in wages and prices.[3] As the supply of labour is scarce relative to demand, workers' bargaining power increases and the price of labour increases. Since labour is one of the primary inputs in the production of goods and services, increases in the price of labour typically pass through to increases in consumer price inflation. The past through from wage to price inflation is, however, not one-for-one. This is due to a variety of factors, including competitive price pressures and the influence of buyer power, plus the fact that the labour costs account for around 50 per cent of firms' total costs (Linehan, Lydon and Scally, 2015).

An economy at or beyond full employment also has implications for growth in national income. Specifically, the GDP growth contributions from labour can no longer come from the employment rate and an expansion in the number of hours worked, but rather must come from increases in the size of the working age population through migration or increases in labour force participation.

To show that the conditions in the domestic labour market are now consistent with full employment, we address three key questions. First, despite the unemployment rate being in the region of previous estimates of

[2] Full Employment refers to an unemployment rate where any individual who wants a job is able to find one. Full employment does not mean that the unemployment rate is zero, as some unemployment occurs as workers move between jobs, referred to as frictional unemployment.
[3] For this reason, full employment is often referred to as the non-accelerating inflation rate of unemployment (NAIRU).

full employment, increases in both average wages and prices have been relatively subdued. As such, it is important to understand whether strong increases in wages and prices are to be expected in the short-run or whether structural changes in the labour market mean that the unemployment rate can fall to a lower level than previously believed.

Second, the labour force participation rate has averaged 62 per cent since mid-2016.[4] This is in contrast to strong growth in the participation rate seen during the Celtic Tiger and early 2000s. It is important to understand whether the labour force participation rate can be expected to increase substantially to meet further employment demand.

Third, net migration during the early 2000s was important in sustaining employment growth (through the positive effects of migrants on participation, demographic and employment channels) up to 2007 and substantial outflows of emigrants mitigated the rise in the unemployment rate thereafter. Going forward can we expect migrants to flow into the economy in the numbers required to meet the on-going strong job growth?

On unemployment and labour force participation, we show that the scope for future increases in aggregate employment are limited in the short-run. In particular, we show that current labour force participation rates are now similar to comparable European countries, and that a number of once-off temporary factors boosted the participation rate during the mid-2000s. This implies that there is limited scope for gains from domestic participation in drawing those not currently active in the labour force into work.

As such, we argue that net inward migration will be the most important source of employment growth in the short to medium term. However, we caution that the period from 2004 to 2007 coincided with a once-off substantial expansion in the pool of available migrants, i.e. EU enlargement. It is not likely that a significant change as large as this will occur over the short to medium term. This means that Ireland is now competing for migrants with other European countries facing similarly tight domestic labour markets. Further, whilst migration inflows can assist in dampening wage growth, increased numbers of migrants will create overheating pressure in other areas of the economy, and particularly in the already congested housing market (Conefrey, O'Reilly, Walsh & Zavalloni, 2019).

The remainder of this paper is structured as follows. Section 1 describes the contribution of employment to the overall economy. Section 2 characterises the recovery of the domestic labour market since the great recession. Sections 3 and 4 examine potential domestic and external,

[4] Labour force participation of the 15-74 age population.

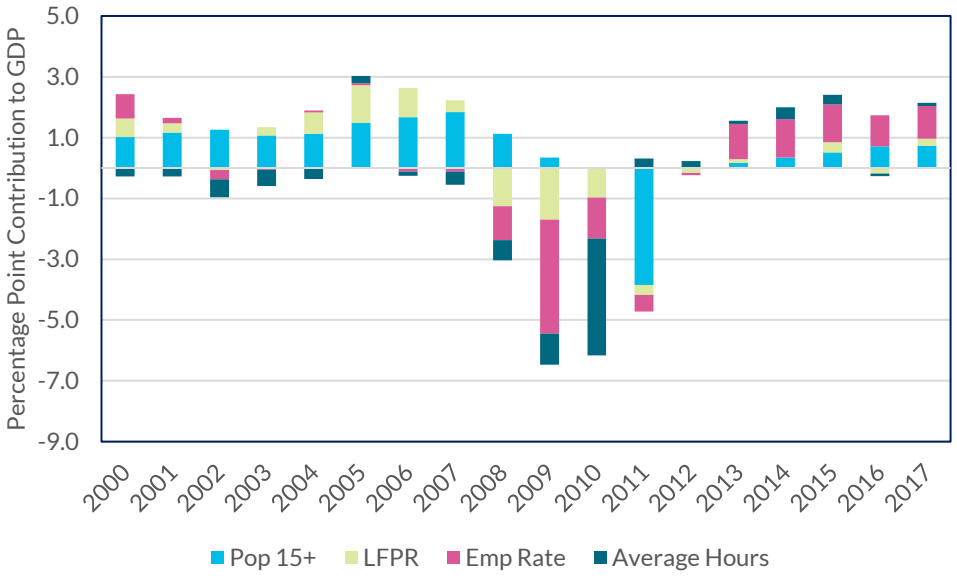
respectively, sources of labour to meet employment growth going forward. Section 5 concludes with a discussion of the policy actions available to authorities in small open economies, without recourse to independent monetary policy, when faced with a labour market at full employment.

2. The Importance of Employment in the Economy

Employment growth has been an important driver of the recovery in the Irish economy.

National income expands when labour and capital combine productively to generate output. Chart 1 decomposes the growth in national income into its labour, capital and productivity contributions. The labour contribution is comprised of four elements: additions to the working age population, growth in the labour force, increases in the employment rate and rises in the average hours worked. Labour contributed strongly to GDP growth during the Celtic Tiger (late 1990s-2003) and subsequent period from 2003 to 2007, with the expanding working age population and an increasing labour force participation rate being important from the turn of the millennium up to 2007. The recovery since 2012 has seen the employment contribution to national income coming disproportionately from the increasing employment rate and increases in the working age population. The potential for increased contributions from the working age population and the labour force participation rate going forward will depend on demographic trends, including migration, as well as an understanding of the likely response of the LFPR to a continued employment expansion.

Chart 1: Labour Contributions to Real GDP Growth



Source: CSO and Authors' Calculations

Prior to 2008, average hours worked were a drag on GDP growth, albeit a small one. During the crisis, a substantial reduction in average hours worked assisted in mitigating the fall in the employment rate as the economy contracted. Hours worked have expanded since 2012; however the contribution of this component to overall GDP growth during economic expansions is limited, especially as wages rise.

Table 1: Labour Market Definitions

	Definitions	Details
Labour Market States	An individual can be at any given time in one of three states: employment, unemployment and inactivity.	Employed = worked for one hour or more for payment or profit, in the reference week including work on the family farm or business and all persons who had a job but were not at work because of illness, holidays etc. in the reference week.
		Unemployed = : Persons who, in the week before the survey, were without work and available for work within the next two weeks, and had taken specific steps, in the preceding four weeks, to find work. Per Eurostat guidelines, the upper age limit for classifying a person as unemployed is 74 years.
		Inactive = all other individuals – also referred to as "not in the labour force".
The labour force	Sum of all individuals age 15 and over who are either employed or unemployed.	These groups represent the current supply of labour for the production of goods and services in a country (International Labour Organisation, 2019).
Working Age Population	Sum of individuals age 15 years and over.	In our analysis, we restrict this to individuals under the age of 75. This is to match with the CSO's definition of the labour force for the purposes of calculating the unemployment rate.
Labour Force Participation Rate	Proportion of individuals who are in the labour force, expressed as a percentage of the working age population.	
The Unemployment Rate	Number of individuals who are unemployed expressed as a fraction of the labour force.	In order to match Eurostat harmonisation guidelines the labour force is restricted to individuals aged 15-74 for the purposes of generating the unemployment rate.
Inactive Population	Individuals who are neither employed nor unemployed.	This is a heterogeneous group, including the retired, individuals looking after children or relatives, and those in education, among others.

Whilst employment contributes to growth, an economy that moves beyond full employment can experience significant wage increases as the supply of labour is scarce relative to demand, workers' bargaining power increases and the price of labour increases. These developments have negative consequences for competitiveness and productivity. Since labour is one of

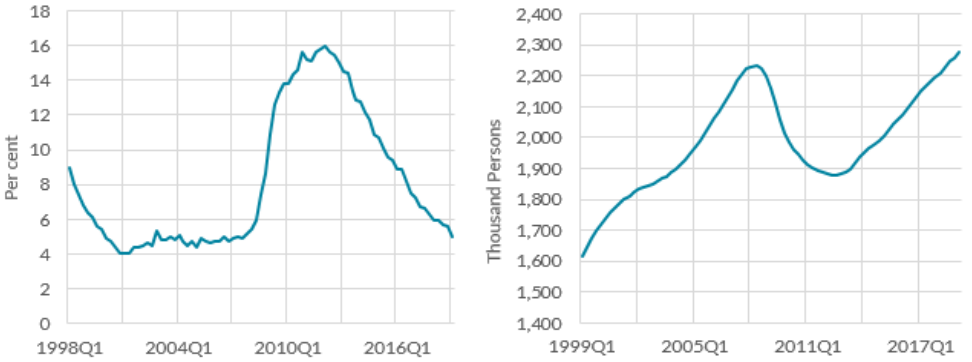
the primary inputs in the production of goods and services, increases in the price of labour also typically pass through to increases in price inflation.

Although the unemployment rate is now in the region of previous estimates of full employment, increases in average wages have been relatively subdued. Compensation per Employee grew by just 0.8 per cent in 2017, rising to 2.8 per cent in 2018. There have been a number of potential explanations put forward to explain this phenomenon. During the last period of full employment in Ireland, the relationship between unemployment and wages and prices was not linear, growth in wages and prices picked up strongly after the unemployment rate fell below 5 per cent (Linehan, et al. 2017). This non-linearity of the wage Phillips curve is also a feature in the Euro Area (Byrne and Zekaite 2018). Another explanation could be that the unemployment rate is not an adequate measure of the level of slack available in the labour market. Byrne and Conefrey (2017) showed that that accounting for those individuals who are not classified as unemployed, but who are outside of the labour force, shows that the pool of available labour may be larger than would be suggested by the standard unemployment rate. For these reasons, our analysis looks beyond the standard measures of unemployment to determine whether the economy is at full employment and is likely to see a pickup in wage growth in the near term.

3. Characteristics of the Recent Employment Expansion

There has been a remarkable recovery in the labour market since 2012. The unemployment rate, which peaked at 16 per cent in the first quarter of 2012, has fallen to 5 per cent in the first quarter of 2019. The number of people employed in the state has now surpassed its pre-crisis peak of 2.24 million persons recorded in the fourth quarter of 2007. As of the first quarter of 2019, there were 2.32 million employed in the state (Chart 2).

Chart 2: Unemployment Rate (LHS) and Employment (RHS)



Source: CSO LFS.

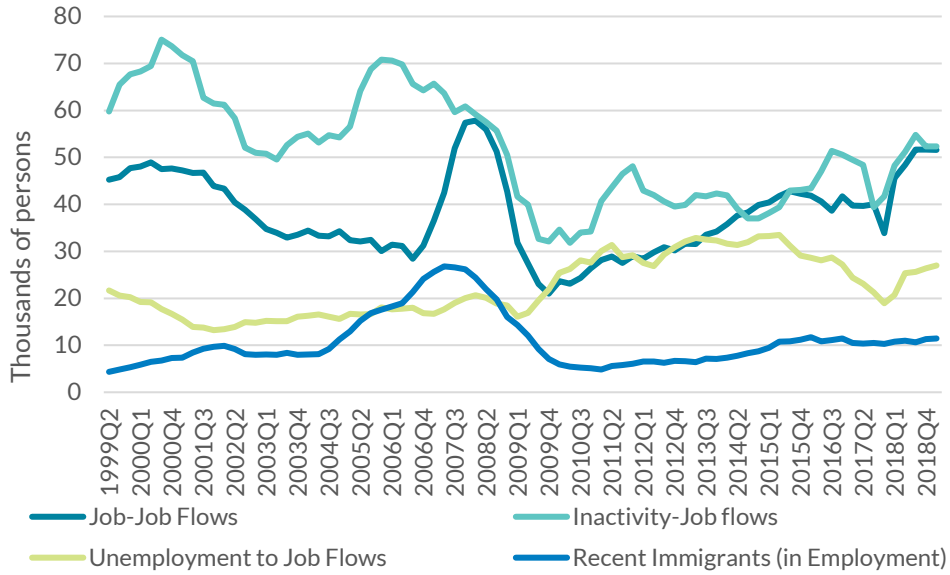
New workers can "flow" into employment from four sources: a different job (employment), unemployment, inactivity or inward migration. Note however that only the latter three can increase aggregate, as job-to-job flows only reallocate labour between firms – leaving the level of employment unchanged.

To examine this further, it is helpful to investigate the changing composition of the flows into employment over time. We calculate gross inflows into employment from the CSO's Labour Force Survey (LFS) by adding all the inflows into employment (Job-Job, Unemployment to Job and inactivity to job). We also calculate the number of immigrants who join the pool of employed workers from the LFS data.[5] Chart 3 shows the relative contribution of domestic flows into employment as well as immigrant contributions.[6]

[5] Indeed, the LFS is now the primary source of data for the CSO's annual population and migration estimates. Population estimates are then benchmarked to the Census results every 5 years

[6] Gross and net flows follow similar trends for the inactivity to job (IJ) and unemployment to job (UJ) flows shown in Chart 3. Gross IJ (UJ) flows are larger than net flows by a factor of 4 (7).

Chart 3: Gross Employment Flows: Contributions



Source: CSO LFS and authors' calculations.

Note: Series seasonally adjusted using a four-quarter moving average. Cell sizes for recent quarters in the migrant contribution series shown here are small and as such should be treated with caution.

The gross flows into employment are dominated by flows originating in the domestic labour market. In the Celtic Tiger and early 2000s, as well as in the recovery after the recession the largest share of gross new jobs came from those flowing from inactivity into employment. During periods where the labour market is tight, such as the period from 2004-2008, and since late 2015, job-to-job flows are as important as the flows from inactivity to the formation of gross new jobs in each quarter.[7] Significant job to job flows mean that firms are competing with each other for workers, and is positively correlated with wage growth. Lydon & Staunton (2019) show that job switching tends to increase rapidly when the labour market is tight. Table 1 shows that contributions to gross new jobs from those moving from unemployment into jobs was highest in the recession and recovery and now looks to be returning slowly to its pre-recession average. Employment contributions from immigrants currently comprises around 10 per cent of gross new jobs, versus 1 in 5 jobs coming from the unemployed, almost 40 per cent from inactivity and the remainder (34 per cent) from other jobs.

The largest contribution to gross employment gains come from those in jobs and those out of the labour force.

[7] The increase in flows from inactivity to employment is mirrored by recent increases in the labour force participation rate.

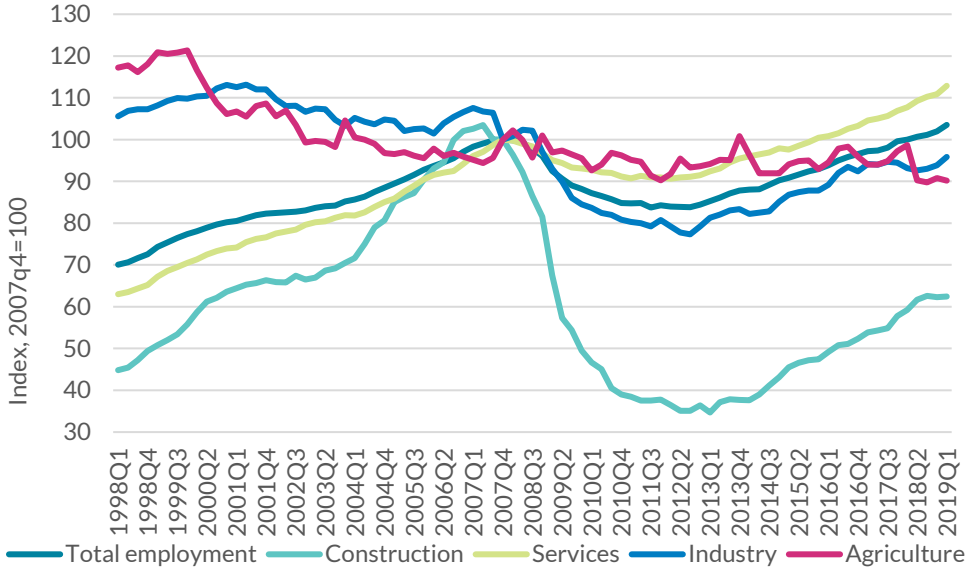
Table 2: Employment Contributions by Flow Type: Annual average shares

	Employment to Employment	Inactivity to Employment	Unemployment to Employment	Migrant Share
1999-2003	33	48	13	6
2004-2007	27	47	13	13
2008-2012	29	39	24	9
2013-2015	32	34	27	7
2016-2019	34	38	20	9

Source: CSO LFS and authors' calculations.

On a sectoral level, the employment expansion since late 2012 has been broad-based. Gains have accrued to all of services, industry, construction and agriculture (Chart 4). Although services recovered to pre-recession levels of employment in late 2014, this was mainly due to the sector losing relatively few jobs during the crisis when compared to construction or industry that saw falls of 60 per cent and 25 per cent, respectively, between 2008 and 2012. This represents a reallocation of labour from relatively less productive sectors, like construction between 2004-2007, to sectors that are more productive.

Chart 4: Employment Growth by Sector: Index (2007q4=100)



Source: CSO LFS and authors' calculations.

Note: Seasonally adjusted employment series used.

It will be important to monitor these developments as the labour market tightens further. In a well-functioning labour market more productive firms offer higher wages, resulting in efficient labour reallocation and an increase in productive output (Hopenhayn, 2014, Honohan and Walsh 2002).

Growth in vacancies and hourly earnings provide an indication of the demand for jobs. Table 3 shows employment, vacancies and average hourly earnings moving together, both within sectors and across the economy. Average total earnings is the product of the number of hours worked and hourly earnings. An increase in hourly earnings indicates that there is reduced capacity for firms to use hours growth to meet employment demand.

Hourly earnings did not fall as rapidly as employment during the crisis, firms in many cases reduced hours rather than cut jobs (see Chart 1). This is consistent with the literature on nominal wage rigidity, which suggests that it is easier to reduce effective wages by reducing hours worked rather than wages (Bernanke, 1986; Lydon, Mathä & Millard, 2019). Relatedly, hourly earnings have taken much longer than employment to return to growth. In fact between 2013 and 2015 hourly earnings fell, indicating the large reserves of labour capacity available in economy, from both unemployment and under-employment (reduced hours) once employment began to grow from 2013.

Employment growth has been broad-based.

Table 3: Employees, Vacancies and Hourly Earnings: Average annual growth rates

Sector	Time Period	Employees	Vacancies	Average Hourly Earnings
Construction	2008-2012	-18.63	45.83	-0.81
	2013-2015	9.95	69.31	0.28
	2016-2019	11	81	2
Industry	2008-2012	-4.89	5.26	1.33
	2013-2015	4	8	0
	2016-2019	2.6	12.67	1.6
Services	2008-2012	-2.6	-0.84	1.81
	2013-2015	3	22	-1
	2016-2019	3.85	6.72	1.44
All	2008-2012	-3.93	-0.86	0.51
	2013-2015	3.23	21.22	-0.18
	2016-2019	4.05	7.44	1.61

Source: CSO LFS, CSO EHECS and authors' calculations.

Vacancies provide an additional measure of labour market demand. Indeed, vacancies in construction and industry have grown strongly since 2013, although services vacancies appear to have moderated somewhat after strong growth between 2013 and 2015. Box A provides some further insights on vacancy trends using data from Indeed.

Box A: Labour demand in Ireland – insights from online job postings

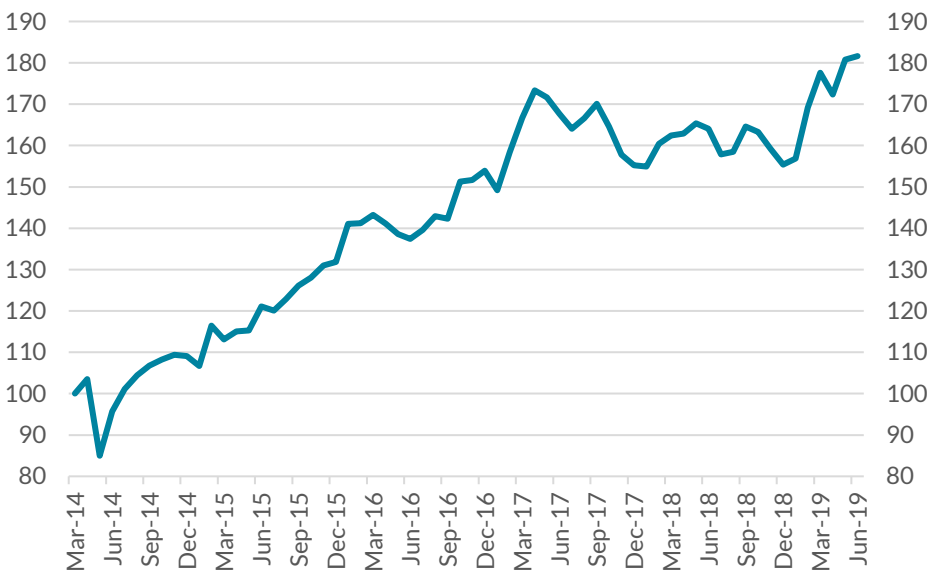
Reamonn Lydon[8]

In a recent *Economic Letter* (Adrjan and Lydon, 2019), we show how information from online job postings on Indeed's Irish website can shed light on labour market developments. This box updates the analysis in two ways. First, it provides a timely update on labour demand by showing trends in job postings through to mid-2019 and identifying the most 'in-demand' jobs. Second, given the increasing importance of inward migration for employment growth, it identifies the jobs that attract the most interest from jobseekers located abroad.

Strong demand for workers in the first half of 2019

One of the key findings from Adrjan and Lydon (2019) is that online job postings closely track official estimates of job vacancies from the CSO. Figure 1 plots the job posting trends to June 2019. There has been a pick-up in the first half of the year, with job postings almost 6.5 per cent higher, compared to the first half of 2018. June 2019 alone was over 10 per cent higher that May 2018.

Figure 1: Job posting trends (January 2014 = 100)



Source: Indeed. See Adrjan and Lydon (2019) for data definitions. Data seasonally adjusted.

Historically, changes in vacancies and changes in new hires are positively correlated. Using the CSO vacancy series from 2008 (allowing us to go back further than the Indeed series), the elasticity of new hires to vacancies is around 0.5. In other words, a 1 per cent increase in vacancies

[8] The author is a Senior Economic Advisor at the Central Bank of Ireland.

is associated with a 0.5 per cent increase in the number of *new hires*.[9] The response of employment, unemployment and wages to an increase in job postings/vacancies depends on the share of job churn in new hires. As pointed out in this article and Staunton and Lydon (2018), the share of job churn has grown steadily throughout the recovery and now accounts for over a third of all new jobs in a quarter –marginally above pre-recession levels. Staunton and Lydon (2018) also show that higher job churn tends to put upward pressure on wages.

With a wide range of skills demanded…

Around 30,000 new job postings appear on the Indeed website each month, attracting 3.9 million monthly visits.[10] Table 1 lists the top-ten job titles advertised on Indeed in the first half of 2019. Just over one in every hundred jobs is for a '*Customer Service Representative*'. Related roles of '*Sales Assistants*' and '*Sales Representatives*' also appear in the top-ten. After this, the range of job titles is quite diverse, covering healthcare, financial, administrative, construction and service-related roles. This is consistent with the broad-based nature of employment growth since the start of the recovery.

Table 1: Top-ten job titles advertised on Indeed Jan-Jun 2019

Rank	Occupation	Share of all job postings
1	Customer Service Representative	1.10%
2	Quantity Surveyor	0.90%
3	Cleaner	0.80%
4	Sales Assistant	0.80%
5	Chef	0.80%
6	Sales Representative	0.70%
7	Administrator	0.70%
8	Porter	0.60%
9	Healthcare Assistant	0.60%
10	Accountant	0.60%
	Top-ten total	7.70%

Source: Indeed job postings advertised on Indeed's Irish Website between January and June 2019.

[9] A 'new hire' is defined as any employee starting a new job in the last three months. This includes workers who transition from inactivity (including inward migration) or unemployment *and* workers moving from one job to another, i.e. 'job churn' or 'job switchers', as in Staunton and Lydon (2018).
[10] SimilarWeb, Total Visits, January 2019.

Table 2: Fastest-growing occupations – Growth in the share of job postings on Indeed from Jan-Jun 2018 to Jan-Jun 2019

Rank	Occupation	Growth rate
1	Food Preparation Workers	69.00%
2	Surveyors	69.00%
3	Truck Drivers	60.00%
4	Civil Engineers	58.00%
5	Sales and Related Workers	50.00%
6	Electrical and Electronic Engineering Technicians	47.00%
7	Teacher Assistants	36.00%
8	Mechanical Engineers	35.00%
9	Electrical Engineers	34.00%
10	Architectural and Civil Drafters	34.00%

Source: Indeed occupations with at least 500 jobs posted in each period.

As well as the *absolute* share of job postings in 2019 H1, we can also look the jobs that have *grown* their share of postings over the last year (Table 2). We aggregate jobs to slightly wider occupational categories than in Table 1 to show a broader picture of current trends in labour demand (these ten occupations represent 8.2 per cent of job postings in 2019). For example, whilst *Quantity Surveyors* are among the most common job titles, we see growth in a much broader range of skilled construction-related roles (surveyors, civil engineers and architectural/civil drafters). This increase in the demand for construction-related roles, combined with strong wage growth in the sector[11], suggests that it may be a challenge to meet this increasing labour demand in the short-term.

Migrants are a potentially important source of workers in technology, healthcare and construction

Inward migration will play an increasingly important role in meeting labour demand in Ireland in the future.[12] We use the Indeed data to analyse the search patterns of jobseekers located outside of Ireland actively searching for jobs in Ireland. This information on 'migration intentions' has been shown by Mamertino and Sinclair (2019) to be strongly positively correlated with actual migration patterns.

We measure 'migration intentions' by counting the share of clicks on job ads from jobseekers located outside of Ireland, at the time of the

[11] See CSO EHECs, May 2019.
[12] This is a recurring theme in recent Quarterly Bulletins. As well as this article, see Box C, Quarterly Bulletin 2, 2019, "Inward Migration and the Irish Labour Market", by David Staunton.

search.[13] Table 3 lists the top-ten job titles ranked by share of clicks from within the EU, but outside of Ireland. For these top-ten jobs, almost four out of every ten clicks (37 per cent) is from a job search outside of Ireland (overall foreign share). To put this figure in context, for all job postings on Indeed, around one-in-nine clicks (11 per cent) comes from outside Ireland. For comparison, the same figures for the UK and London are 3 per cent and 9 per cent respectively.

Language-related roles attract considerable interest, with up to 40 per cent of clicks on these jobs coming from jobseekers outside of Ireland, and around 25 per cent from within the EU. After languages, technology-related job searches are popular, with more than one-in-three clicks from foreign jobseekers, of which around half are within the EU. Architects are the only job title that appears in both the 'fastest growing' list in Table 2 and in the top-ten list of EU job-seeker interest. This suggests that fulfilling these high-demand roles in the future may rely increasingly on inward migration, from both within and outside of the EU.

Table 3: Top 10 job titles by share of clicks from elsewhere in the EU, Jan-Jun 2019

Rank	Occupation	EU click share	Overall foreign click share
1	Translator	25%	41%
2	Bilingual Sales Representative	23%	36%
3	Game Tester	19%	32%
4	Obstetrics And Gynaecology Physician	16%	53%
5	Media Content Reviewer	16%	29%
6	Architect	14%	39%
7	iOS Developer	13%	36%
8	Android Developer	13%	35%
9	PHP Developer	13%	41%
10	C++ Developer	12%	31%

Source: Indeed job titles with at least 100 posted jobs. EU excludes Ireland.

Table 4 lists the top-ten job titles ranked by share of clicks from outside of the EU. Technology related job titles are once again prominent, with various roles receiving around 30 per cent of clicks from foreign jobseekers. The key difference versus Table 3 is the high interest in healthcare roles when we look outside the EU. Four of the top-ten roles,

[13] From the geolocation of the Internet Protocol address.

including the top-three, are in healthcare, with up to a half of all job search for some of them coming from workers currently located outside of Ireland. Finally, as with Architects in the previous table, we see that fulfilling labour demand in certain skilled construction-related jobs – like *Senior Civil Engineers* – relies heavily on inward migration, with 40 per cent (35 per cent) of clicks on these jobs coming from foreign (non-EU) searches. It is clear that Irish employers are competing in global labour market for many of these skilled roles.

Table 4: Top 10 job titles by share of clicks from outside the EU, Jan-Jun 2019

Rank	Occupation	Non-EU click share	Overall foreign click share
1	X-Ray Technician	45%	51%
2	Obstetrics And Gynaecology Physician	37%	53%
3	Emergency Medicine Physician	36%	43%
4	Senior Civil Engineer	35%	40%
5	Senior .Net Developer	34%	40%
6	Intensive Care Nurse	33%	37%
7	Senior Software Engineer	32%	40%
8	SAP Consultant	31%	41%
9	Senior Automation Engineer	30%	36%
10	Software Architect	29%	36%

Source: Indeed job titles with at least 100 posted jobs.

4. Domestic Sources of Employment Growth Going Forward

In this section we examine the working age population to establish whether we can expect domestic demographic and labour force participation trends to contribute to employment growth going forward.

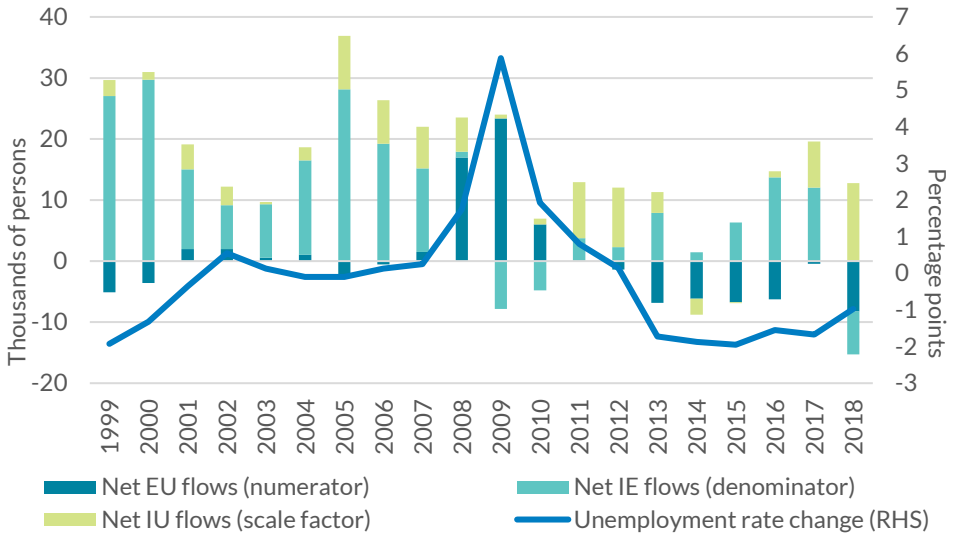
The fall in the unemployment rate since 2012 has been remarkable in both scale and speed. Reductions in the unemployment rate occur due to falls in the numbers unemployed (numerator); and/or increases in the labour force (denominator).

We decompose unemployment rate changes into three net labour market flows (Chart 5): employment to unemployment flows (numerator); inactivity to employment flows (denominator) and unemployment to inactivity flows (occurring in both numerator and denominator).

Chart 5 confirms that entering employment from unemployment contributes substantially to falls in the unemployment rate. The pool of the unemployed has fallen, since the peak of over 350,000 in 2010, to approximately 110,000 in early 2019. The contribution from this group to the decline in the unemployment rate, and indeed the employment expansion, will decline going forward as the stock of these individuals falls to levels consistent with job churn.

In the early 2000s labour force inflows came primarily from inactivity directly to employment, with an increased role for transitions to unemployment occurring during the early 2000s as the labour market tightened substantially. This pattern has re-emerged since early 2018, inflows into the labour force are coming increasingly from unemployment, a further sign that the labour market has tightened.

Chart 5: Unemployment Rate Falls: Annual average contributions



Source: CSO LFS and Authors' calculations.

Note: EU – Employment to Unemployment. IE – Inactivity to Employment. IU – Inactivity to Unemployment.

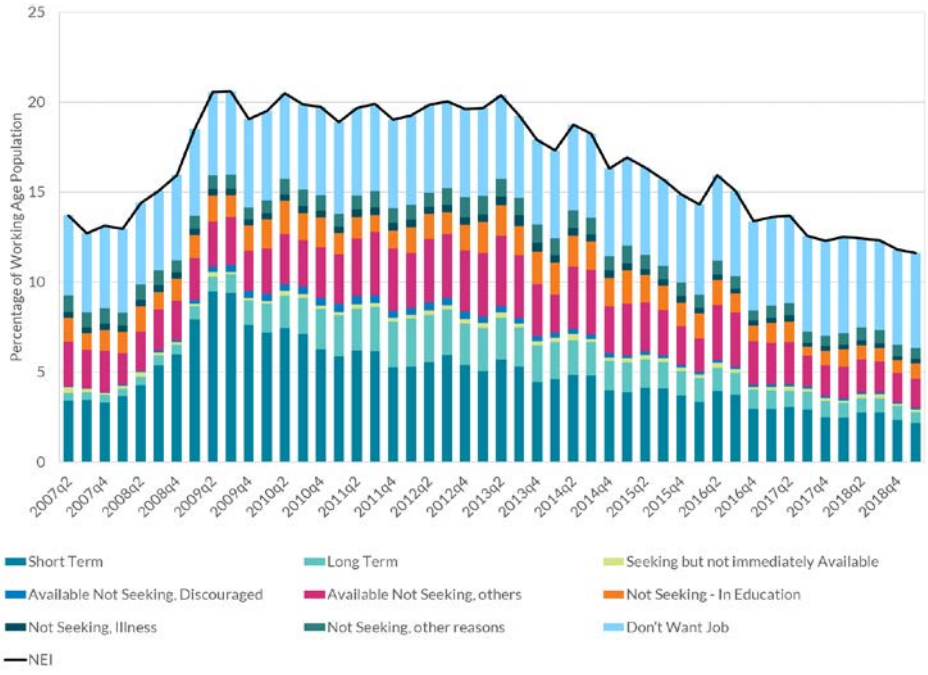
Non-Employment Index

A key point in Chart 5 is the importance of the fall in flows from inactivity to employment. This represents a further decline in the slack available to the domestic labour market. To quantify this, we decompose the "Non-Employment Index" from Byrne and Conefrey (2017). That paper showed that while the stock of individuals outside of the labour force is quite large, the rate at which these individuals transition into employment is heterogeneous depending on their reason for being inactive. For example, people who are inactive because they are caring for children may eventually resume work, whereas retired individuals are much less likely to do so. This has important implications for the analysis in this paper. Chart 6

shows three key facts about the remaining stock of inactive individuals. First, the numbers of short-term unemployed, those with the highest transition probabilities has fallen to historically low levels consistent with job churn. Second, individuals who characterise themselves as "available: not seeking", the group with the second highest transition probability on average, has also declined significantly. It is clear that in the aftermath of the crisis, this group grew significantly – as workers became discouraged stopped their job search activity. While it is not possible to estimate a natural level for this group, the remaining stock is not large enough to support significant employment growth into the future.

Lastly, the largest contribution to non-employment are individuals who classify themselves as "Do not Want a Job". Byrne and Conefrey (2017) show that this group have a very low transition probability (in the region of 1 per cent per quarter on average). However, the size of the group raises the question of whether they represent a substantial pool of additional slack available to the economy.

Chart 6: Non-Employment Index Contributions



Source: CSO and Authors' calculations.

In the first quarter of 2019, there were 934,000 individuals in the "Do not want a Job" category (Table 2). However, using the LFS microdata, we can see that a significant majority of these individuals are aged between 15-20 and 65+.

Table 4: Components of the Inactive Population

	2019Q1 (thousands)
Inactive Population	1480.2
Of Which: Does Not Want a Job	934.8
Does Not Want a Job (ex -15-20 and 65+)	351.6

Source: CSO and authors' calculations.

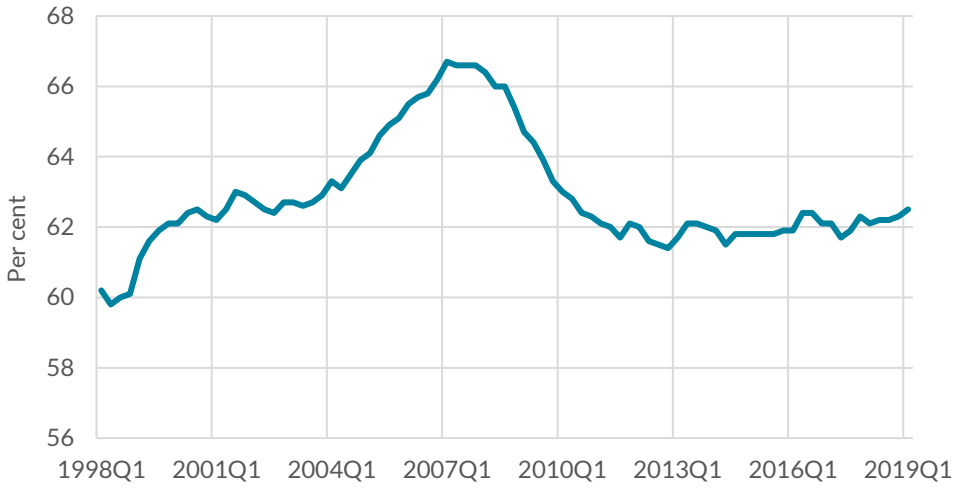
Excluding these groups, 351,000 individuals between the ages of 20 and 65 remain in the category. This represents 14 per cent of the total population in this age group. Using a simple regression analysis, we find that people are more likely to be in the "Don't want a Job" category if they are older, female, married, less educated and have children.[14] The likelihood also increases significantly with the time since they last held employment. Indeed, excluding the over 50s from the category further reduces the number to 171,000 (9.7 per cent of the population in this age group).

The numbers of those neither in work, nor searching for work, have fallen substantially.

Labour Force Participation

A key difference between the last period of full employment (2005-2007) and the present period is in the labour force participation rate, which is significantly lower than it was over a decade ago (Chart 7). However, this reflects a number of factors which, taken together, imply that we are unlikely to see significant gains to participation over the coming years.

Chart 7: Labour Force Participation Rate



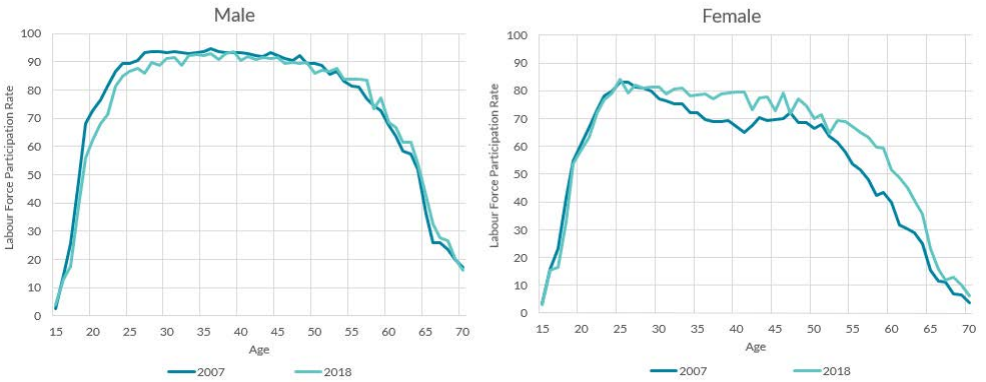
Source: CSO LFS.

[14] The model was estimated estimated using a probit where the dependent variable takes a value of one if the individual is classified as "do not want a job" and zero otherwise. A set of standard labour supply determining covariates were included. Results available on request.

First, the participation rate of men aged between 25 and 35 during the 2000s was much higher than at present (Chart 8). This was primarily related to the predominance of construction employment among individuals in this age cohort during this period (Conefrey & McIndoe Calder, 2018) which boosted participation among this cohort. This was a temporary phenomenon, in particular, the very high participation rate of those in the younger age groups, has declined and is now more in line with European Union averages.

Second, younger people are staying in education longer on average, which is likely to have positive advantages for productivity and labour force participation in the long-run (FitzGerald & Bercholz, 2015).

Chart 8: Labour Force Participation Rate by Age in 2007 and 2018: Male (LHS) and Female (RHS)



Source: CSO LFS and Authors' calculations.

Third, labour force participation among prime working age (25-50) women has increased significantly compared with its level in 2007 (Chart 8, RHS). There are a number of factors that could be driving this development, including increased housing costs. Female labour force participation is lower than that of men for most age cohorts across the EU (Table 5). The LFPR gender gap is falling both within the EU and in Ireland and in 2018 stood at 12 per cent on average, compared to 10.5 per cent in the EU and close to 9.5 per cent in the UK and the Netherlands. LFPR gender gaps across countries reflect both cultural and institutional factors, Walsh (1993). Ireland's convergence to the EU average for the LFPR gender gap has been rapid and sustained over recent decades. This reflects both cultural changes and the implementation of policies supporting women entering the labour force over recent years, for example child care subsidies. In addition, it is clear that across the age distribution (Chart 8 RHS) female participation now closely mirrors the shape of male participation. Together these factors suggest that labour force

The labour force participation rate gender gap is falling.

participation among women in Ireland is unlikely to increase much further, at least in the short-term.

Table 5: LFPR gender gap: Ireland and selected EU countries

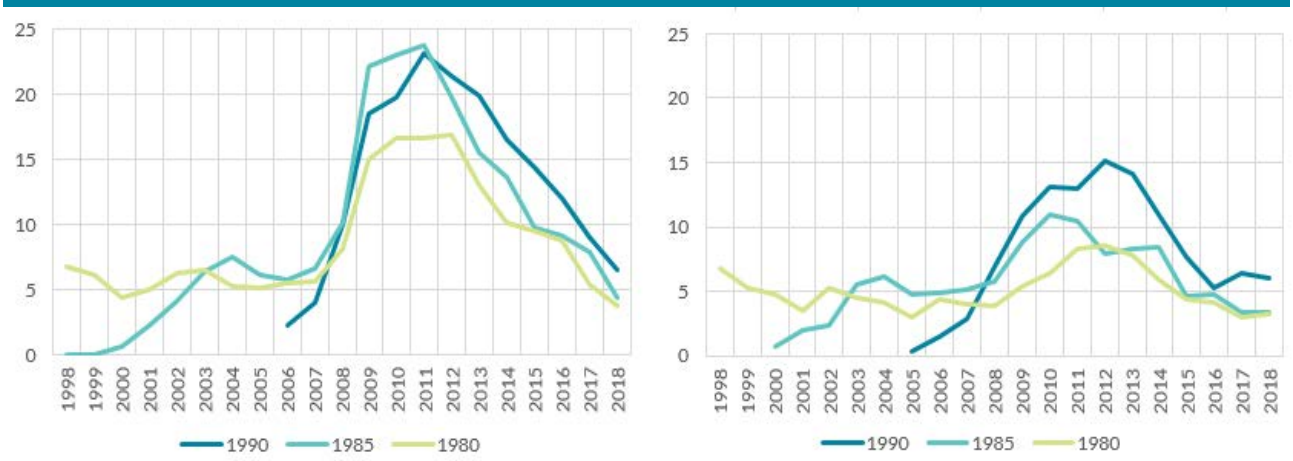
	Ireland	EU	Sweden	UK	Netherlands	Germany
1998-2003	22.5	17.7	5.7	14.4	16.9	15.4
2004-2008	19.2	14.7	5.7	13.1	13.8	12.6
2009-2012	14	12.7	6.1	11.9	11	11.3
2013-2018	12.7	10.9	5.1	10.3	10	9.6

Source: Eurostat and authors' calculations.

Note: LFPR gender gap calculated as the average quarterly percentage point difference between the male and female LFPR.

Fourth, another factor affecting the reduced participation rate of younger cohorts in 2019 is that many of them (particularly ages 25-30) entered the labour force during the financial crisis. There is a large literature on the scarring effects of unemployment spells on the young, Bell and Blanchard (2011) and Strandh et. al. (2014). Chart 9 shows that the unemployment rate of both men and women who were born in 1990 was approximately 1.5 percentage points higher in 2019Q1 than individuals born in 1980.[15]

Chart 9: Unemployment Rate by Birth Year over Time: Male (LHS) and Female (RHS)



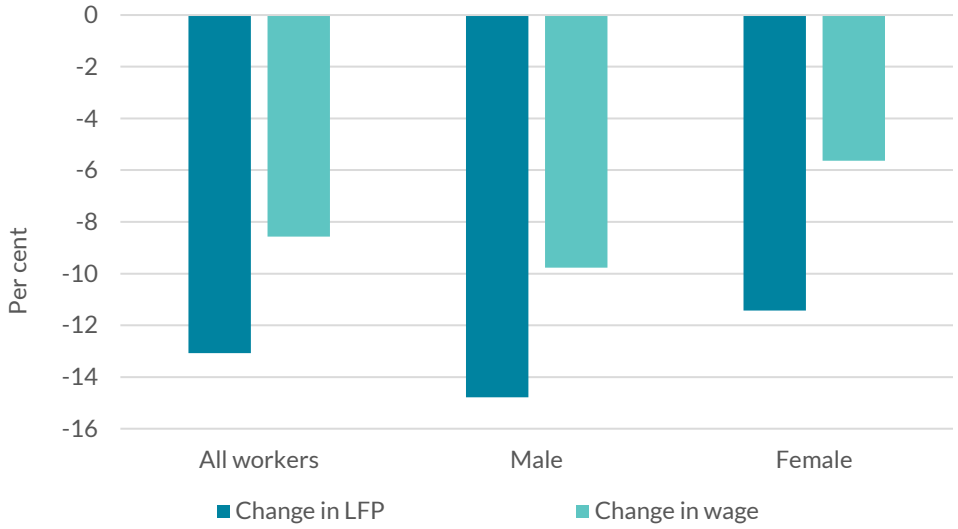
Source: CSO LFS and authors' calculations.

Last, participation declines of the young co-move with unemployment rates and wages. Lydon and Lozej (2018) find that new hires suffered the largest pay declines at the onset of the financial crisis in 2008. Chart 10 shows the results of a set of regressions where the dependent variable is the difference in earnings of age group *i* for each gender between 2017 and 2007, and the explanatory variables capture wage determining

[15] This holds for individuals born between 1988 and 1991.

characteristics such as experience and occupation. This model, together with the observed labour force participation rates of younger cohorts is consistent with published estimates of the elasticity of labour participation to wages (Byrne and O Brien, 2017).

Chart 10: Labour Force Participation and Wages for the Young: Changes between 2007 and 2017 by gender

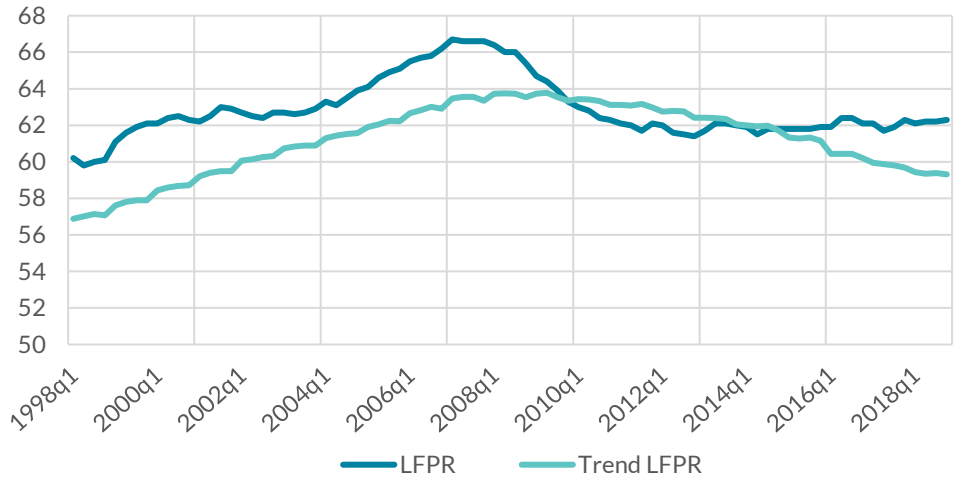


Source: CSO SILC and authors' calculations.

These factors combined confirm our hypothesis that labour force participation is unlikely to increase significantly over the short to medium term. We confirm this using the cohort model with cyclical effects from Byrne and O Brien (2017). This model estimates a labour force participation equation for each age-gender-birth year group and sums them to a trend aggregate participation rate. The results of the model for males and females combined is shown in Chart 11.[16]

[16] Separate male and female model results are available on request.

Chart 11: Cohort Model

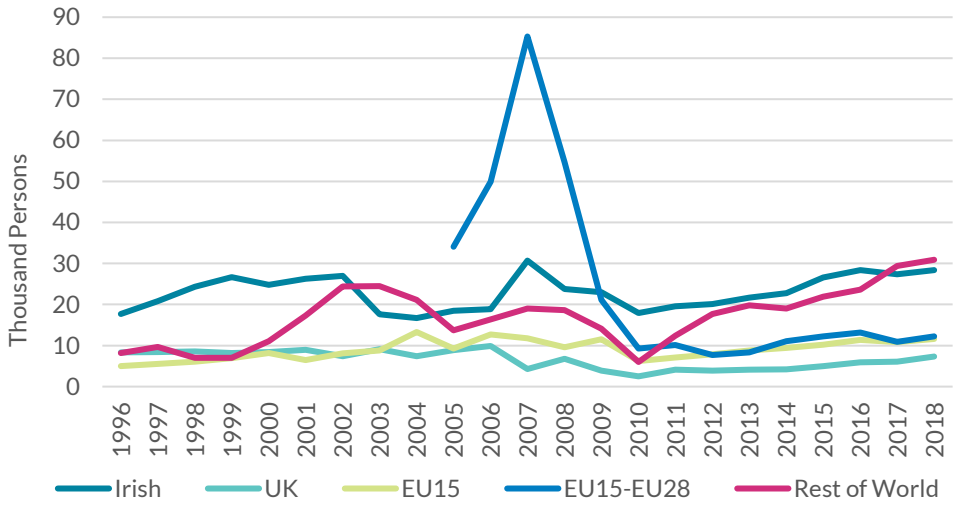


Source: CSO LFS and Authors' Calculations.

5. External Sources of Employment Growth Going Forward

The analysis thus far shows that the conditions in the domestic labour market are now consistent with full employment. Conefrey *et al* (2019) suggest that increases in net inward migration can dampen the adverse effects associated with full employment, in particular strong wage growth. In a highly open economy such as Ireland, a very tight labour market tends to attract labour from abroad. During the mid-2000s, the accession to the European Union of eight eastern European countries had a significant impact on labour market developments in Ireland at a time when the economy was at full employment (Chart 12).

Chart 12: Immigrant flows (By Nationality Grouping)



Source: CSO.

A key question is whether the substantial net inward migration into employment seen during this period will be repeated in the short to medium term. To answer this, it is helpful to consider the characteristics and employment profile of the current cohort of migrants as distinct from the group who entered Ireland in the mid-2000s.

Table 6 highlights the differences in the nationality profile of employed migrants since 2013 when compared to the pre-financial crisis period. While EU accession countries made up nearly 60 per cent of all recently arrived migrants in employment between 2004 and 2007, they account for around one in four new migrants currently. Since 2013, the share of migrants from emerging economies beyond the EU account for one in three employed new migrants, a tripling of their pre-crisis share.

Table 6: Recent Immigrant Employment Share, by Nationality: Annual averages

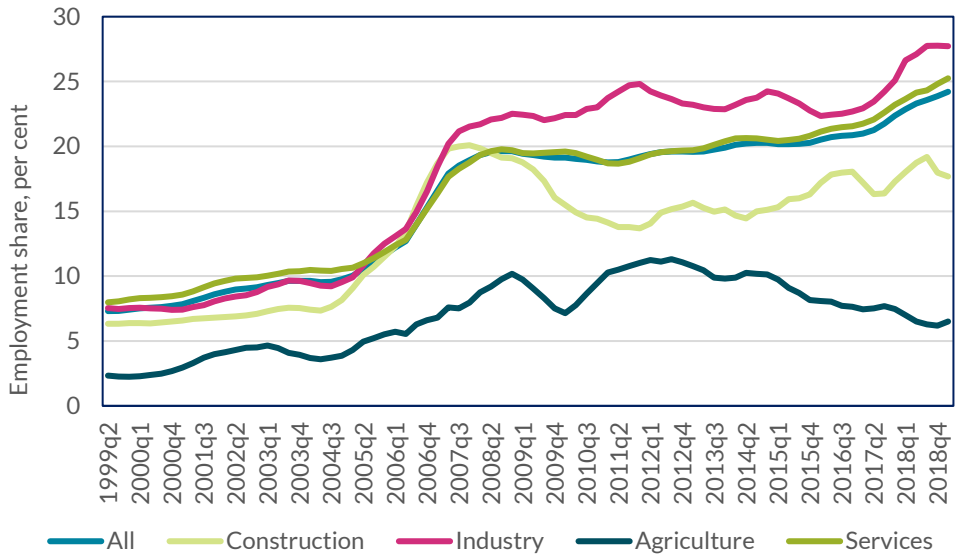
	UK	EU15	EU15-EU28	Other Developed	Other Emerging Economies
1998-2003	28.74	32.34		11.16	27.76
2004-2007	6.92	15.62	58.81	7.19	11.45
2008-2012	8	29	42	7	15
2013-2019	7.24	27.26	23.32	8.27	33.91

Source: CSO LFS and authors' calculation

Note: Other developed and Other Emerging Economies are broken down from the CSO's "Rest of World Category" in the LFS using the authors' calculations. Other developed include: Other European; Australia and Oceania; North America. Other emerging economies include: North Africa and other Africa; South and South-East Asia and East Asia; Central America and Caribbean, South America, Near and Middle East.

Examining the migrant share in all employment (Chart 13) shows that in the first quarter of 2019, nearly 1 in 4 of those employed were non-nationals, this is highest for industry and services. Despite growing since 2014, the share of non-nationals in construction remains below its previous 2008 peak of 1 in 5.

Chart 13: Migrant Share in Employment, by Sector



Source: CSO LFS and authors' calculations.

Note: Series seasonally adjusted using a four-quarter moving average. Cell sizes for recent quarters in the agriculture share series shown here are small and as such should be treated with caution.

The (non-Irish) migrants entering Ireland to work are increasingly highly skilled with the majority now holding at least tertiary qualifications. The growth in the migrant share in industrial employment, however, has seen similar growth in those with secondary and post-secondary qualifications relative to those with at least tertiary qualifications. Employment in industry is becoming increasingly characterised as highly skilled (those with at least tertiary qualifications), migrants with secondary and post-secondary qualifications have contributed in equal numbers to those with at least tertiary qualifications since the end of the boom and continuing into the recovery and growth phases of the labour market.

Migrants are increasingly well-educated and come from outside of the EU.

Over the coming years, a sustained increase in the number of migrants back to levels seen during the last period of full employment would ease labour supply pressures. Conefrey, O'Reilly and Walsh (2019) confirm this finding, but they also find that a sustained increase in migration creates overheating pressures in other areas of the economy – particularly in the housing market.

There are also a number of reasons why the rate of net inward migration may not return to the high levels seen in 2005-2007. During that period, 10 countries[17] joined the EU and provided a large pool of potential migrants for the Irish labour market. Until mid-2011 however, the number of migrants from the eight accession countries in Eastern Europe were

[17] Czech Republic, Cyprus, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia.

restricted by all EU member states except Ireland, Sweden and the United Kingdom. These restrictions were removed in 2011. The shrinking share of European migrants in all migrants indicates that Ireland must compete with several EU destinations for migrants from within the Union. This is a change from the years up to 2008. Going forward, Ireland will be competing for migrant labour from with other high employment countries in Europe and the OECD (Economist, 2019; OECD 2019). Indeed, job flows from abroad are increasingly originating from outside of the EU. The visa regime for non-EU citizens has been adjusted to allow for non-EU migrants being sought for particular skills shortages. For example, the Critical Skills Employment Permit, introduced in 2014. Still, visa requirements for non-EU citizens are onerous, and employment is often a prerequisite for residency. This means that non-EU citizens may face different elasticities of supply with respect to labour shortages in Ireland than their EU counterparts. The gravity model of migration (Anderson, 2011) also implies the challenges in attracting migrants from outside of the EU, migration-inducing wage differentials need to be higher the further away migrants originate from, in addition Ireland is competing for these migrants with many other expanding developed and developing countries.

6. Conclusions

This article has shown that conditions in the domestic labour market are now consistent with full employment. Employment numbers are above pre-crisis levels, while the unemployment rate fell to 5 per cent in the first quarter of 2019 and the stock and composition of individuals outside of the labour force has fallen to a level such that it is unlikely to support continued employment growth. Labour force participation rates are also above trend, evidenced by the strong increase in female participation – primarily among women aged between 25 and 50. We have shown that the high participation rates of young cohorts seen during the Celtic Tiger and early 2000s period was a temporary factor, and has now returned to levels comparable with those seen in the Euro Area. Migration, which facilitated strong employment growth during the period from 2004 to 2008, has increased strongly in 2018 and early 2019, but the analysis has shown that it is unlikely to reach the levels seen during after EU enlargement in the short to medium term. This is due in part to Ireland having to compete for migrants with other high employment economies both within and beyond the EU. As such, attracting migrants may only occur at higher wage differentials going forward than seen in the 2004-2007 period that coincided with the EU accession countries joining the pool of available EU migrants at relatively low wages. This implies that the wage dampening effect of net inward migration may be subdued when compared to the pre-crisis period.

This remarkable improvement in the labour market is welcome, but maintaining such favourable conditions will require action on the part of policymakers to avoid eroding competitiveness through wage and price pressures as the economy continues to grow. The policy actions available to authorities faced with an economy at full employment are constrained when it is small, highly open and part of a monetary union. However, it is important that government policy does not exacerbate competitiveness challenges, while maintaining supply-side supports to improve housing supply, transport networks and public services to support continued employment growth.

References

Adrjan, P. and Lydon, R. (2019) "Clicks and jobs: measuring labour market tightness using online data" *Economic Letter*, Vol 2019 (6), Central Bank of Ireland.

Anderson, J.E. (2011) "The gravity model", *Annual Review of Economics*, 3: pp. 133-160.

Bell, D. and Blanchflower, D. (2011) "Young people and the Great Recession", *Oxford Review of Economic Policy*, Vol. 27 (2), Summer 2011, pp. 241–267.

Bernanke, B. S. (1986). Employment, Hours, and Earnings in the Depression: An Analysis of Eight Manufacturing Industries. American Economic Review, 76(1), 82-109.

Bercholz, M. and FitzGerald, J. (2016) "Recent Trends in Female Labour Force Participation in Ireland", *QEC Special Article*, September, ESRI.

Byrne, D. and Zekaite, Z. (2018) "Missing wage growth in the euro area: is the wage Phillips curve non-linear?", *Economic Letter*, Vol 2018 (9), Central Bank of Ireland.

Byrne, S. and Conefrey, T. (2017) "A Non-Employment Index for Ireland", *Economic Letter*, Vol 2017 (9), Central Bank of Ireland.

Byrne, S. and O'Brien, M. (2017) "Understanding Irish Labour Force Participation", *The Economic and Social Review*, Vol 48(1) Spring.

Conefrey, T. and McIndoe-Calder, T. (2018) "Where are Ireland's Construction Workers?" *Economic Letter*, Central Bank of Ireland.

Economist, (2019) "The rich world is enjoying an unprecedented jobs boom", *The Economist*, London, https://www.economist.com/leaders/2019/05/23/the-rich-world-is-enjoying-an-unprecedented-jobs-boom

Honohan, P. and Walsh, B. (2002) "Catching up with the leaders: The Irish hare", *Brookings Papers on Economic Activity*, Vol (1).

Hopenhayn, H. (2014) "Firms, Misallocation, and Aggregate Productivity: A Review", *Annual Review of Economics*, Vol 6(1), pp735-770.

Linehan, S., Lydon, R., McIndoe-Calder, T., Reddan, P. and Smyth, D. (2017) "The Labour Market and Wage Growth after a Crisis", *Quarterly Bulletin Signed Article*, Central Bank of Ireland.

Linehan, S., Lydon,R., and Scally, J. (2015) Labour Cost Adjustment during the Crisis: Firm-level Evidence. *Quarterly Bulletin Signed Article (3)*, Central Bank of Ireland.

Lydon, R. and Lozej, M. (2018) "Flexibility of new hires' earnings in Ireland", *Labour Economics*, Vol 53, August, pp 112-127, pp 27-60.

Lydon, R., Mathä, T. Y., & Millard, S. (2019). Short-time work in the Great Recession: firm-level evidence from 20 EU countries. *IZA Journal of Labor Policy*, *8*(1), 2.

Mamertino, M. and Sinclair, T. (2019) "Migration and online job search: A gravity model approach" *Economic Letters*, Vol 181, pp 51--53

OECD, (2019) "The Future of Work: OECD Employment Outlook 2019", *OECD Employment Outlook*, OECD, Paris. https://www.oecd.org/employment/Employment-Outlook-2019-Highlight-EN.pdf

Staunton, D. and Lydon, R. (2018) "Does increased job switching signal higher wage growth?" *Economic Letter*, Vol 2018 (13), Central Bank of Ireland.

Staunton, D. and Smyth D. (2019) "Inward migration and the Irish Labour Market" *Quarterly Bulletin*, Box C, Central Bank of Ireland.

Strandh, M. Winefield, A., Nilsson, K. and Hammarström, A. (2014) "Unemployment and mental health scarring during the life course", *European Journal of Public Health*, Volume 24, Issue 3, June 2014, pp. 440–445.

Walsh, B. (1993) "Labour force participation and the growth of women's employment, Ireland 1971-1991". Economic & Social Review, Vol. 24(4), pp. 369-400, Dublin: Economic & Social Research Institute

T: +353 (0)1 224 6000
E: publications@centralbank.ie
www.centralbank.ie

Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem