Economic Letter Series

A Non-Employment Index for Ireland

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Abstract

As well as a sharp rise in unemployment, the economic and financial crisis saw a significant increase in the number of people outside the labour force, i.e. individuals who are currently not classified as unemployed but are not in employment and are available for work. In this Letter we construct a new measure of labour utilisation - the Non-Employment Index (NEI) - that takes into account this potential additional labour supply. The index distinguishes between groups like short-term and long-term unemployed, discouraged workers and passive job seekers, factoring in how likely each group is to transition to employment. By including tailored weights that take into account persistent differences in each group's likelihood of regaining employment, the NEI is arguably a more comprehensive measure of labour market conditions than the standard unemployment rate. Our estimates show that, as of the last quarter of 2016, the non-employment rate had declined to 9.8 per cent at the end of 2016 - significantly below its crisis peak but higher than the standard unemployment rate. Our analysis suggests that there may be some scope for the unemployment rate to fall further before significant wage pressures emerge, but labour supply conditions are tightening as a strong recovery continues.

1 Introduction

The economic and financial crisis of 2008-2012 had a detrimental effect on the labour market. The headline unemployment rate - which peaked at 15.1 per cent in the 4th quarter of 2011 - is a commonly cited measure of the im- pact of the crisis but this captures only part of the effect of the economic downturn on the labour market. As well as the workers who lost their jobs, a large number also exited the labour force entirely. Among those who dropped out of the labour force but remained in Ireland, some returned to education or training, while

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a significant number became discouraged as the recession persisted and stopped searching for work. The number of individuals who reported that they did not want a job also increased. In aggregate, the overall labour force participation rate declined by four percentage points from Q4 2007 to Q4 2012 while the size of the inactive population - i.e. those neither employed or unemployed - increased by 13 per cent. Given the size of the pool of non-employed individuals, a broader measure of labour utilisation than the standard unemployment rate may be needed to provide a fuller picture of labour market conditions.

Measuring the degree of labour utilisation is also a key consideration in assessing the ability of the economy to grow at a sustainable rate: a low level of level of labour underutilisation suggests a tight labour market where continued growth could lead to excessive inflationary pressures; in contrast, a high degree of labour underutilisation indicates that the economy could continue to grow strongly without an immediate risk of overheating. [2]

A number of extended measures of unemployment are published by the CSO which include some individuals not usually counted as unemployed. These include passive job seekers, discouraged workers, students and individuals who report that they do not want a job. A key characteristic of these broader measures of unemployment is that they assign the same weight to all non-employed individuals outside the labour force. As a result, they do not take into account the substantial differences in the degree of labour force attachment of different individuals. For instance, looking at the transition rates of non-employed individuals who move back into work shows, unsurprisingly, that those who state that they

are actively looking for work consistently have a much higher transition rate to employment than individuals who report that they are not engaged in job search.

In this Letter we construct a measure of labour utilisation that takes into account the differences in the degree of attachment to the labour force of various non-employed groups. We do this by calculating transition rates into employment over a long period from 1998-2016. We then use these observed transition rates to weight all non-employed individuals by their relative likelihood of moving back into employment. In this way, our extended measure has an advantage over the standard unemployment rate in that it includes all non-employed individuals. In contrast, the broader measures of labour supply published by the CSO include only selected groups from the population of non-employed workers.

Our Letter follows closely the methodology of Hornstein, Kudylyak and Lange (2015) and Kudlyak (2017) who were the first to publish a non-employment index for the US. The index is updated every month and published routinely for the US by the Federal Reserve Bank of San Francisco. While the work to explicitly estimate a non-employment index is recent, it follows on a large body of previous research that points to the importance of considering job seekers who are outside of the labour force as well as the unemployed when analysing the labour market. Recently, ECB (2017) has analysed developments in wider measures of labour market slack in comparison with the rather narrow definition of the unemployment rate. ECB (2017) argues that the high level of underutilisation indicated by the extended measures is likely to result in a continuation of the trend of subdued wage dynamics. [3]

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[2]In particular, Bermingham et al. show that short-term unemployment is a better predictor of inflation pressures than the standard overall unemployment rate.

[3]In the context of estimating matching efficiency of the labour market, Veracierto (2011), Diamond (2013) and Elsby, Hobijn, and Sahin (2013) have argued that it is important to account for the job seekers out of the labour force in addition to the unemployed. Furthermore, Bergin, Kelly and McGuinness (2014) and Lawless et al. (2014) demonstrate that even within the group of unemployed, there are differences in employability rates for long-term unemployed workers.

This Letter is structured as follows. In Section 2, we describe the data used to calculate the Non-Employment Index (NEI). Section 3 examines the incidence of non-employment in Ireland over time and calculate the job finding rates of different groups who are classified as being outside the labour force. Section 3 presents the official broader measures of unemployment published by the CSO, along with a comparison of these measures across countries. We then construct our alternative non-employment index in Section 4, weighting different non-employed groups by their observed likelihood of finding a job. Section 5 concludes.

2 Data

The analysis in this paper is based on data from the Quarterly National Household Survey (QNHS) which is a large-scale, nationwide survey of households in Ireland carried out by the CSO. It is designed to produce quarterly labour force estimates that include the official measure of employment and unemployment in the State (ILO basis). The survey began in September 1997, replacing the annual April Labour Force Survey (LFS). Households are requested to take part in the survey for five consecutive quarters and are then replaced by other households. As a result, one fifth of the households in the survey are replaced each quarter and the QNHS sample involves an overlap of 80 per cent between consecutive quarters and 20 per cent between the same quarter in consecutive years. The QNHS sample size is around 26,000 households each quarter and the response rate is generally high at around 85 per cent.

The longitudinal nature of the QNHS makes it possible to track the labour market status of individuals over consecutive quarters during which they remain in the QNHS sample. The detailed information on worker flows allows us to calculate the probability of workers moving between different states, i.e. from unemployment to employment or from inac-

tivity to unemployment, and these probability weights are used in constructing our non-employment index.

3 Non-Employment in Ireland

The Labour Force comprises the population aged 15-74 who are either employed or unemployed. However, the unemployed are only a subset of the working age population who are not in work (hereafter non-employed). The definition of unemployment is based on the notion that the individual 'seeks work'. Seeking work, however, is not a clear-cut process and individuals' search for employment will have varying degrees of intensity depending on their circumstances. Every individual not currently working has some probability of transitioning into employment in the next quarter, and this probability reflects their attachment to the labour force.

In the Irish context, the stock of those not employed, but not meeting the formal definition of unemployment is very large relative to the numbers unemployed. The QNHS splits the non-employed into seven different cohorts, and we split the unemployed into short term (<1 year) and long term (>1 year). The stock and proportion of individuals in each cohort is described in Table 1.

Between 2008Q4 and 2012Q4, the number of persons in the inactive group (i.e. outside of the labour force but not classified as unemployed) grew significantly. It is noteworthy that the number of discouraged workers grew by 20,380 during this period, accounting for a significant portion of the increase in those outside the labour force. In all periods, the category 'Does Not Want a Job' accounts for the majority of those outside of the labour force.

An examination of the flows into employment reveals another reason to consider a broader measure of labour utilisation than the standard unemployment rate. The flows into employment from unemployment and inactivity in each quarter are shown in Figure 1. As

Table 1: Unemployed and Persons out of the Labour Force

| | 2002Q4 | | 2008Q4 | | 2012Q4 | | 2016Q4 | |
	No	% WAP	No	% WAP	No	% WAP	No	% WAP
Short Term Unemployed	32,784	1.22	130,727	4.22	115,942	3.82	63,309	2.10
Long Term Unemployed	34,318	1.28	41,005	1.32	175,904	5.79	79,075	2.62
Seeking but not immediately Available	1,518	0.06	3,369	0.11	5,611	0.18	3,585	0.12
Available Not Seeking, Discouraged	3,708	0.14	6,717	0.22	26,990	0.89	8,296	0.27
Passive Job Seekers	3,149	0.12	2,196	0.07	6,782	0.22	4,695	0.16
Available Not Seeking, others	12,507	0.47	10,434	0.34	15,799	0.52	11,186	0.37
Not Seeking - In Education	34,130	1.27	24,530	0.79	26,994	0.89	16,996	0.56
Not Seeking, Illness	19,872	0.74	17,223	0.56	22,615	0.74	13,805	0.46
Not Seeking, other reasons	35,664	1.33	20,478	0.66	33,075	1.09	16,505	0.55
Don't Want Job	744,992	27.72	798,768	25.80	803,747	26.47	813,640	26.95

Note: WAP is the Working Age Population
Source: CSO and Authors' calculations

the chart shows, the flow of workers from in-activity into employment every quarter is significantly larger than the flow of workers from unemployment back to work. The probability that an individual from each of these non-employed or inactive cohorts transitions into employment in the following quarter serves as a proxy for each of these cohorts' attachment to the labour force.

Figure 1: Flows into Employment
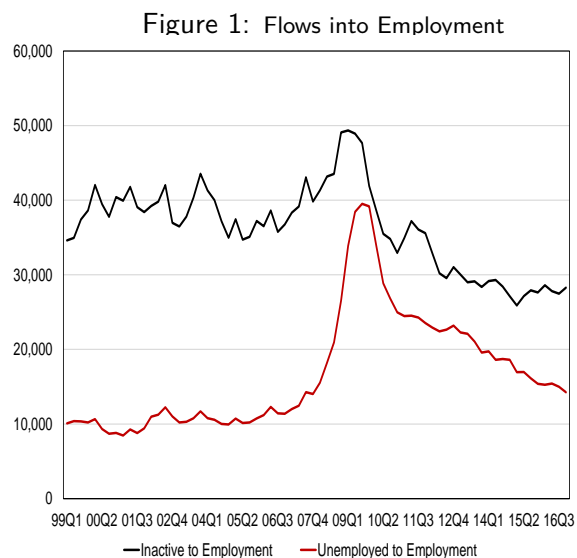
Source: CSO, own calculations.

The average transition probabilities are described in Table 2. Short term unemployed persons had the highest transition probability over the sample period, at 16.3 per cent. Those who are seeking but not immediately available have an average transition probability of 11 per cent. This category comprises individuals who have been actively seeking work in the previous four weeks but are not available in the next two weeks. Those who are not seeking because they are in education or training have an average transition probability of 8 per cent. Overall, the ranking of the employment probabilities in Table 1 is closely aligned with individual's self-reported desire to work as recorded in the QNHS: those actively seeking work have a higher transition probability than those who want work but are not searching for a job.

The fact that some of the cohorts described above, who are not included in the unemployment figures, have significantly higher transition probabilities than long term unemployed, suggests that the unemployment rate may not fully capture the degree of utilisation in the labour market. To address this, we propose a non-employment index in section four.

Table 2: Transition Probabilities

	Average Transition Probability
Short Term Unemployed (<1 Year)	16.3%
Long Term Unemployed (>1 year)	6.6%
Seeking but not immediately Available	10.98%
Available Not Seeking, Discouraged	3.11%
Available Not Seeking, others	8.02%
Not Seeking - In Education	8.7%
Passive Job Seekers	9.6%
Not Seeking, Illness	2.1%
Not Seeking, other reasons	3.7%
Does not want Job	3.4%
Part-time Underemployed	3.7%

Source: CSO and Authors' calculations
Note: Transition probability of "Part-Time Underemployed" reflects transitions to full time employment.
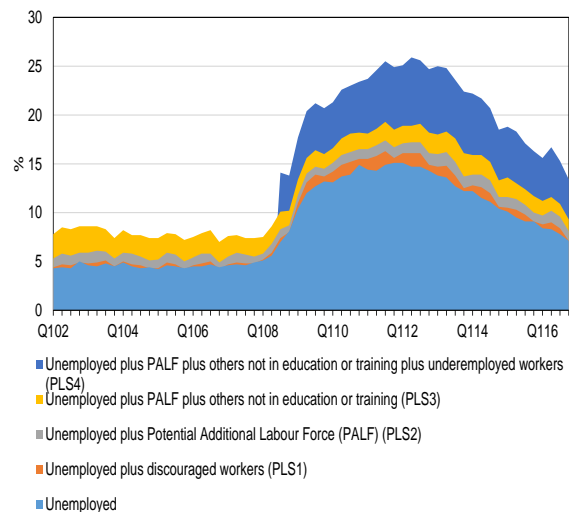
4 Broader Measures of Unemployment

The QNHS contains four broader measures of potential labour supply in addition to the standard unemployment rate. The broader measures of unemployment are shown in Figure 2 and are constructed by moving subgroups from outside the labour force to unemployment.

- PLS1 adds discouraged workers. These are individuals who are out of work but who have become disillusioned with job search.

- PLS2 includes all individuals in Potential Additional Labour Force (PALF). The PALF is made up of two groups: persons seeking work but not immediately available and persons available to work but not seeking, of which discouraged workers make up the largest number.

- PLS3 includes all those in the previous two categories (PLS1 and PLS2) along with persons outside the labour force but not in education or training.

- PLS4 is the broadest measure of unemployment or potential labour supply and is calculated by adding part-time

underemployed workers to PLS3. Part-time underemployed workers are individuals currently working part time who are willing and available to work additional hours. The broadest measure of unemployment (PLS4) stood at 13.4 per cent in Q4 2016(Figure 2). Given that part-time underemployed workers represent a significant pool of labour that is under utilised in the economy, in section 5 we estimate a version of our non-employment index including these individuals.

Figure 2: Broader Measures of Labour Supply

■ Unemployed plus PALF plus others not in education or training plus underemployed workers (PLS4)
■ Unemployed plus PALF plus others not in education or training (PLS3)
■ Unemployed plus Potential Additional Labour Force (PALF) (PLS2)
■ Unemployed plus discouraged workers (PLS1)
■ Unemployed

Source: CSO, own calculations.

Figure 3 shows the broadest measure of labour utilisation across euro area countries. With the exception of Germany, increases in the broadest measure of labour supply are evident across all countries during the financial crisis. In the aftermath of the crisis, there are significant cross-country differences in the evolution of the broader measures. In France and Italy, broader measures of unemployment have continued to increase throughout the recovery. In contrast, in Ireland and Spain and in the other euro area economies, they have recorded some recent declines, but remain well above pre-crisis estimates.

Figure 3: Broader Measures of Labour Supply
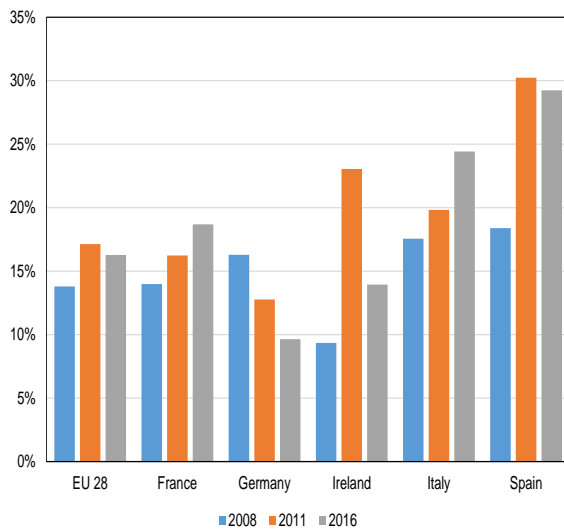
5   Non-Employment Index

For each of the broader measures of unemployment discussed above, the groups that are added to the number unemployed receive the same weight as those formally classified as unemployed. As a result these measures may overestimate the effective available labour supply as they do not make allowance for the different job-finding probabilities of the outside the labour market groups.

We now outline a non-employment index (NEI) for Ireland that addresses this drawback by taking into account differences in the labour market attachment of non-employed groups. Our methodology follows closely that of Kudlyak et al (2014) who were the first to develop a NEI for the US. The NEI is a weighted average of the population shares of the cohorts outlined in Table 1, where the weights for each cohort is given by that group's average transition probability to employment over the period 1998 - 2016 (Table 2). This index gives a measure of the available units of labour in the economy. We assign a weight of 1 to the short term unemployed, who have the highest transition probability, and assign each of the other cohorts' weight relative to this. For example, persons 'seeking but not immediately available' have a transition probability over the sample of 10.98 per cent. As such, they are given a weight of $\frac{10.98}{16.3} = 0.67$. More formally, we generate the non-employment index:

$$\sum_{j=1}^{9} \theta_j \frac{Pop_j}{Pop}$$

where we multiply the population share of cohort j by their transition probability defined weight θ. There are nine j cohorts as outlined in Table 1. This yields the non-employment rate (Figure 4) as a percentage of the *working age population* which we can interpret as the degree of utilisation of labour in the economy.

Figure 4: Non Employment Index (NEI), Ireland
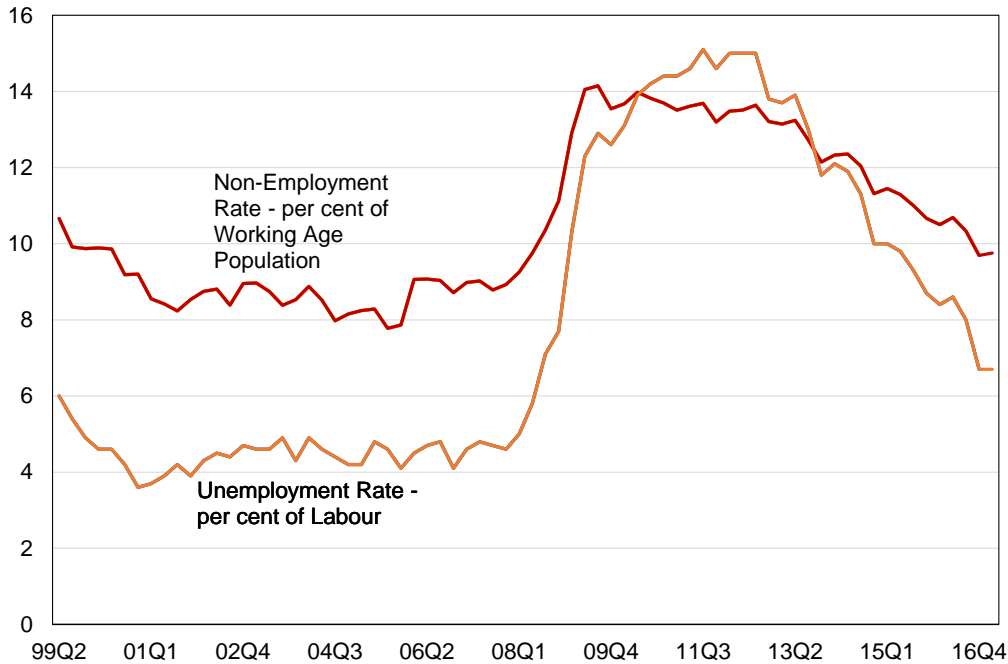
Figure 4 shows our estimate of the Non-Employment Index (NEI) for Ireland along with the standard unemployment rate. Different baselines are used to calculate the two series and so they are not directly comparable - the NEI is calculated as a percentage of the *working age population* while the unemployment rate is expressed as a share of the *labour force*. Nevertheless, it is still useful to examine the evolution of the two series over time. Looking first at the NEI, the chart shows that it decreased steadily from 1999 through the early 2000s before settling between 8 and 9 per cent in the years immediately before the 2008 crisis. The negative impact of the crisis on the labour market is clearly evident as the NEI in-

creased sharply to 14.1 per cent at its peak in late 2009. It is notable that in the three years between 2009 and 2012, the NEI barely declined: in Q3 2012 it was just 0.1 of a percentage point lower than its value in the last quarter of 2009. Since late 2012, however, the NEI has been on a steadily declining path. The most recent value of the NEI for Q4 2016 is 9.8 per cent, only marginally higher than its average value in 2007 of 8.9 per cent.

Looking at the behaviour of the NEI and the unemployment rate over time, the NEI is higher than the unemployment rate during the Celtic Tiger years. This indicates that the degree of underutilisation in the labour market during this period was higher than suggested

by the standard unemployment rate. From the onset of the crisis, the pre-2008 trends invert as the actual unemployment rate converges on the NEI and then exceeds it for most of the period from 2010 to 2015.

This fact that the actual unemployment rate exceeds the NEI for most of the period since 2010 is striking, but the result can be explained by two developments. First, the labour force is the denominator used to calculate the unemployment rate and it consists of only employed and unemployed individuals. In a downturn, people leave the labour force quickly as they become discouraged or re-enter education in anticipation of a sustained layoff period. The reduction in the size of the labour force mechanically causes the unemployment rate to grow more rapidly during a downturn. In contrast, the non-employment index uses the working age population as its denominator. The working age population is a much broader measure than the labour force and includes all other non-employed individuals who remain in the State. It is less affected by the issues which cause the labour force to shrink in a downturn and therefore has a smaller impact on changes in the unemployment rate.

The second factor which explains the increase in the unemployment rate above the NEI from 2010 is the very sharp rise in long-term unemployment during the crisis. Long-term unemployment increased from 24 per cent of overall unemployment in Q1 2009 to 60 per cent in Q4 2012. The standard unemployment rat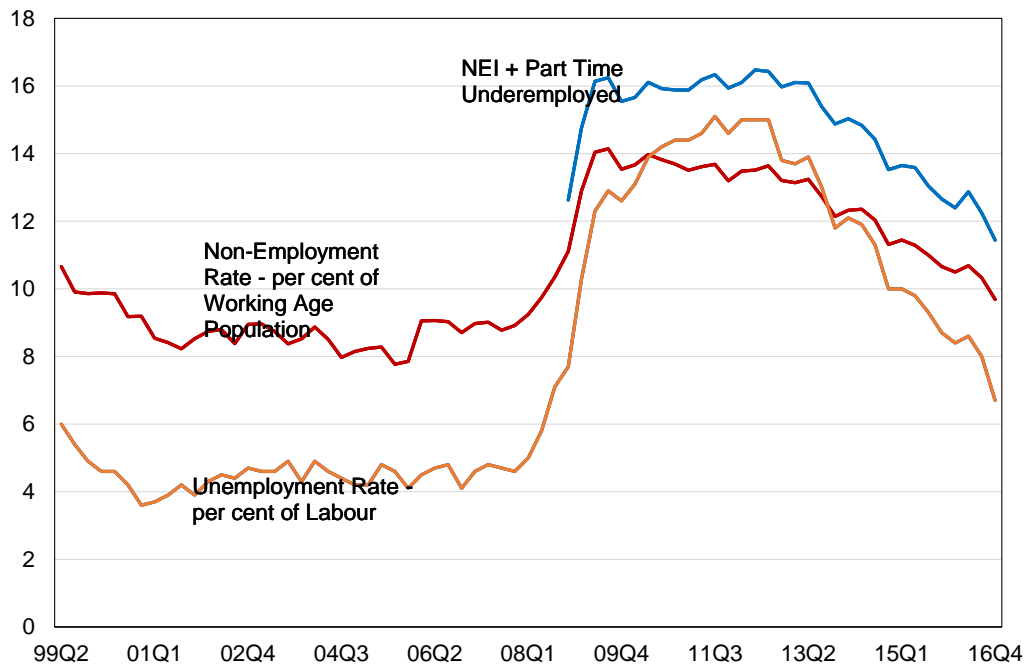e gives the same weight to short-term and long-term unemployed individuals. In contrast, the NEI significantly down weights the long-term unemployed relative to the short-term unemployed, reflecting the lower observed job-finding probabilities of long-term unemployed workers. Given the steep rise in long-term unemployment from 2008, this explains why the NEI increases by less than the unemployment rate during the crisis.

Since late 2015, there is some evidence of the pre-2008 relationship between the unemployment rate and the NEI becoming re-established. Since Q4 2015, the unemployment rate has fallen below the NEI. The ongoing downward trend in both measures paint a similar picture of an improving labour market, but the NEI suggests a higher level of labour underutilisation currently than the standard unemployment rate.

As mentioned in the previous section, the broadest measure of unemployment published by the CSO adds underemployed individuals to the stock of unemployed workers. A person is classified as underemployed if they are in employment but are available and willing to work more hours. We calculate a version of the NEI to include underemployed workers. We assign a weight of 0.57 to these invididuals in the NEI. This is calculated as the sum of their relative transition probability into full time employment and the "underutilisation rate",[4] encompassing the ratio of hours worked by a full time employee on average and a part time worker on average.

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[4]This is the method used by Kudlyak *et al*

Figure 5: NEI including Part-Time Underemployed Workers

The blue line in figure 5 shows the result of including the part time underemployed into the NEI measure.[5] The part-time underemployed are predominantly females between age 20-24 and 40-50. By far the largest number of part time underemployed are females working in the retail trade sector. Other sectors that feature prominently are food and beverage services activities, and construction (predominantly males). Adding these individuals increases the estimate of the NEI to 11.5 per cent in Q4 2016. Both estimates of the NEI imply that there may be scope for further employment growth in the short run before significant labour shortages and associated wage pressures become apparent.

There are few examples of NEIs for other countries similar to the one we construct for Ireland, but comparable data are available for the US. As noted earlier, the NEI is published monthly in the US which makes it possible to compare the US and Irish cases. As shown in Figure 6, the Irish NEI was higher than the US rate in 1999 but in the subsequent years it declined gradually. In 2001, the Irish NEI fell below the US rate and remained lower until 2008. From the onset of the crisis, the non-employment rate in Ireland increased significantly above the US rate reflecting the larger rise in unemployment and non-participation in

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[5]Data are available from 2008Q3 onwards

the Irish labour market. The NEI has declined in both Ireland and the US from the high levels recorded in 2010 and 2011 and as of the last quarter of 2016, the NEI for Ireland was slightly higher than the US rate.

Figure 6: NEI - Ireland and US
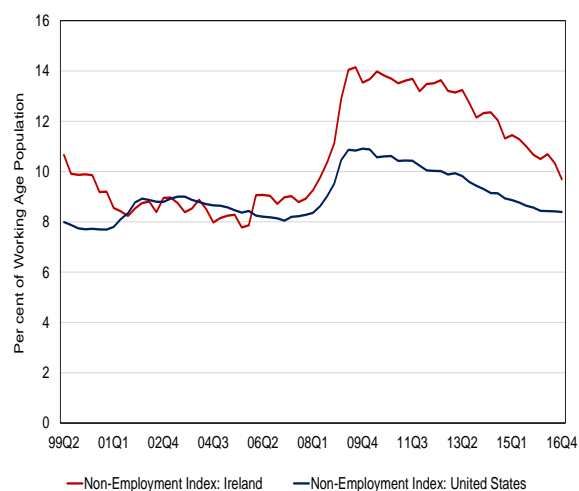
Source: CSO, own calculations.

6 Conclusion

The standard measure of unemployment includes only individuals who are actively looking for work and are available to start work imminently. As a result of this narrow definition, the stock of unemployed workers represent only a small subset of the overall number of non-employed workers in the population. In this Letter, we construct a new Non-Employment Index (NEI) for Ireland that incorporates all non-employed individuals and takes into account their different probabilities of transitioning into work. We also augment this measure by including persons who are working part time but willing and available to work more hours. In this way, the NEI could be viewed as a more comprehensive measure of labour utilisation. Based on the latest data, this broader measure of unemployment indicates that the rate of underutilisation in the labour market has declined significantly since the peak of the crisis, but there is scope for further improvements before the negative effects of the crisis are fully unwound. Further reductions in the NEI would boost labour supply and positively impact the economy's potential growth rate over the medium term.

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