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POLICY PAPER

Atypical Work and Ireland's Labour Market Collapse and Recovery

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Abstract: Across many countries, the rise of atypical work has been noted whereby employees are increasingly in less secure contractual situations. While this might lead to more flexible labour markets, there are potential downsides for individuals. We explore the prevalence of atypical work in Ireland which provides a fascinating case study. Ireland experienced a dramatic deterioration in its labour market around the Great Recession with unemployment rising from 4.8 per cent in 2007 to 15 per cent in 2012. This situation was also reversed somewhat quickly with unemployment falling to 8 per cent by 2016. Such dramatic swings provide the context in which we explore whether atypical work increased for new job holders with the onset of recession and whether or not this weakened as the economy recovered. We find that atypical work did increase with the recession and, although moderating, the likelihood of new jobs being atypical persisted into the recovery. This raises important questions about whether economic recovery alone will improve job quality, in addition to job numbers.

I INTRODUCTION

In this paper, we examine recent trends in the prevalence of "atypical work"[1] in Ireland. Atypical work has become of increasing interest internationally partly due to the rise in such working arrangements. OECD (2015) indicates that "traditional" permanent, full-time work is increasingly being replaced with non-traditional working arrangements, such as part-time and temporary work and self-employment. Between the 1990s and the end of the Great Recession about 60 per cent of jobs created in OECD countries were non-traditional.

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[1] By atypical work, we are generally referring to part-time contracts and temporary contracts

While the rise in the prevalence of atypical work is generally accepted, the desirability or otherwise of the trend is more contentious. Taking a positive view, OECD (2015) argues that such working arrangements can create job opportunities for some people who would otherwise be out of work, and that the growth in non-standard employment also reflects the needs of some workers as well as the shift away from manufacturing-dominated economic growth to services and knowledge work. Empirical support for this view has been found in a number of papers. For example, using panel data whereby people can be tracked over time, Addison and Surfield (2006) show how atypical work offers unemployed people a route out of unemployment in the US. Similarly, Couprie and Joutard (2017) also use panel data, from France, and are able to show how an atypical job provides an advantage to people with such jobs over the unemployed in terms of the subsequent likelihood of acquiring a more standard employment contract.

Taking more macroeconomic perspective, but again taking a positive view, Eichhorst and Tobsch (2013) argue that the growth in non-standard forms of employment in Germany has contributed to job growth, along with assisting Germany to withstand the Great Recession as unemployment did not increase over the period and the number of jobs did not decline either. Eichhorst and Tobsch (2013) conclude that the growth of atypical forms of employment in Germany is complementing the standard employment segment of the German labour market and that job quality in terms of pay, employment stability and job security is not declining, in general, as a result of the growth in non-standard forms of employment.

In spite of these potential positive features of atypical work, concerns also exist. OECD (2014) discusses how these working arrangements may be contributing to inequality and poverty, particularly among low-educated workers, females and young people. Given this, the OECD argue that policymakers need to ensure that part-time and temporary work are in fact stepping stones to better employment, along the lines suggested by Couprie and Joutard (2017), and not an end in themselves. Gialis and Leontidou (2016) focus on the increase in atypical work in Greece, Italy and Spain in the context of the Great Recession and emphasise the increase in insecurity for employees that has accompanied the trend. More generally, OECD (2014) argues that a country's labour market performance should be assessed not only in terms of the number of job opportunities but also the quality of such jobs. They have found that temporary work is strongly associated with poor job quality, specifically in terms of lower earnings,[2] higher levels of labour market insecurity and higher job strain.

[2] Interestingly, Addison and Surfield (2007) show that part of the observed lower earnings of people in atypical work situations can be explained by unobserved heterogeneity. While they describe this as being consistent with the more optimistic views of atypical work, they also note that earnings are only part of the total compensation package. This is important because atypical workers in the US are less likely to have health benefits.

Ireland offers an interesting setting in which to explore atypical work because of the dramatic swings in its labour market over the last decade. Below, we provide some details of these labour market swings but for now we will note that unemployment rose from 4.8 per cent in 2007 to 15 per cent in 2012 and then fell again reaching 8 per cent in 2016. Analysing trends against the backdrop of such dynamics in the labour market allows us to explore two specific issues. First, did atypical work become more prevalent in the economic downturn? Second, did atypical work become less prevalent in the upturn or did any pattern that emerged during the recession persist into the recovery? These are important questions because they provide a sense of whether trends in atypical work might be embedded in labour markets. Whether this is a good or a bad thing is a separate issue.

The remainder of the paper is structured as follows. In Section II, we provide an overview of changes in the Irish labour market over the period 2004 to 2016 with the aim of providing the context to the paper. In Section III, we describe the data. In Section IV, we present the results of our analysis where we examine how the incidence of atypical work has evolved between 2004 and 2016 in Ireland. As indicators of atypical work, we use part-time (as opposed to full-time) jobs and temporary (as opposed to permanent) contracts. We focus our analysis on new jobs and in this way we are providing a clearer perspective on the issue in question. Previous analyses such as Eichhorst and Tobsch (2013) have usually looked across all jobs (new and existing) and have reported changing proportions of atypical work. Our approach captures the dynamic elements of trends in atypical work. We also look at union status and self-employment thereby broadening the discussion. We discuss the results in Section V.

II IRELAND'S LABOUR MARKET 2002 TO 2016

The severe impact that the Great Recession had on Ireland's labour market has been well documented. In particular, the collapse in economic activity that took place between 2008 and 2011 resulted in Ireland's unemployment rate increasing from 4.6 per cent in 2004 to 15 per cent in 2012, while the employment rate declined from 65.9 per cent to 58.8 per cent over the same time period (see Table 1).

Research on the impact of the recession on Ireland's labour market shows that young people in particular were severely affected (e.g., Kelly *et al.*, 2014; Kelly and McGuinness, 2014), along with immigrants (e.g., Barrett and Kelly, 2012; McGinnity *et al.*, 2014) and males (McGinnity *et al.*, 2014). The collapse in the property sector in Ireland, which was one of the main factors that underlay its economic demise, contributed to some of these observed results; particularly for males as, relative to females, their employment was over-concentrated in the construction sector prior to the recession (see McGinnity *et al.*, 2014).

Table 1: Irish Labour Force Statistics: 2004 – 2016

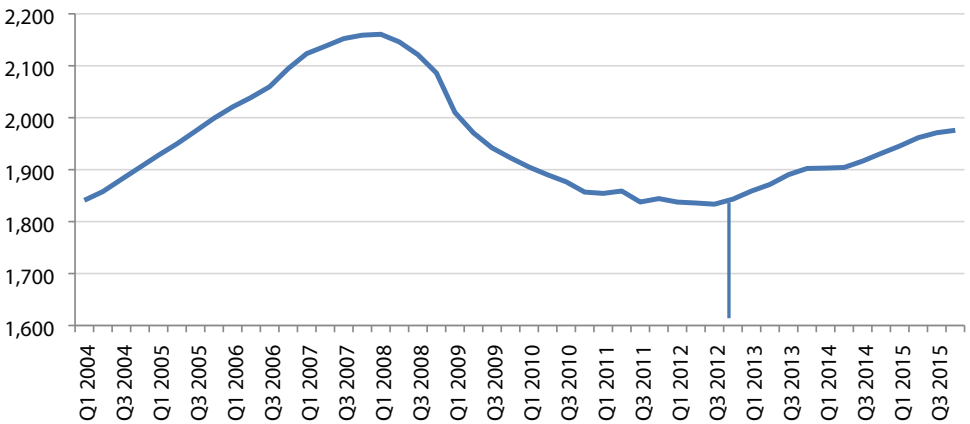
	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Unemployment rate % [1]	4.6	4.8	4.7	4.8	5.8	12.3	13.9	14.6	15.0	13.9	11.9	9.8	8.6
Participation rate %	60.5	62.1	63.2	64.1	63.7	62.5	61.1	60.5	60.1	60.5	60.0	60.2	60.6
Employment rate % [2]	65.9	67.5	68.5	69.1	67.9	62.2	60.0	59.2	58.8	60.2	61.3	63.1	64.7

Sources: Quarterly National Household Survey Q2, Central Statistics Office.

Note: [1] Based on persons aged 15-74.
[2] Based on persons aged 15-64.

The Irish economy turned the corner on the economic crisis in 2012 with Gross National Product (GNP) growing by 1.6 per cent (Duffy *et al.*, 2015). The labour market also started to improve towards the end of that year with the unemployment rate falling to 13.8 per cent and the numbers in employment starting to grow again for the first time since the start of 2008 (see Figure 1). Unemployment has continued to fall since this time period – the rate stood at 8 per cent in Quarter 3, 2016 – while employment has continued to increase. The rate was 65.4 per cent in Quarter 3, 2016, which is the highest that the country's employment rate has been since the end of 2008.[3]

Figure 1: Numbers in Employment: 2004 – 2015



Source: Derived using Quarterly National Household Survey data

A lot of attention has been given to the improvement in the labour market, particularly in terms of the growth in the numbers employed being a *green shoots* indicator of economic recovery. Since employment started to grow in Quarter 4, 2012, there are an additional 182,400 individuals in employment: as of Quarter 3, 2016, there was a total of 2,027,100 people in employment, which is an increase of 9.9 per cent between then and Quarter 4, 2012. While on the surface, this is a good news story, less is known about the quality of the jobs that are being created since the recovery. Has there been a growth in atypical employment arrangements, specifically in terms of the proportion of part-time work, temporary employment contracts and self-employment?

[3] www.cso.ie/en/qnhs/releasesandpublications/qnhspostcensusofpopulation2011.

III DATA AND DESCRIPTIVES

The analysis presented in this paper is based on individual-level data from Ireland's Quarterly National Household Survey (QNHS), 1998 to 2015. The QNHS is Ireland's official labour force survey and is compiled by the Central Statistics Office. Although the QNHS is collected four times a year, we take the data for Q2 only in each year 1998 to 2015. We restrict the sample to individuals who started their current job within eighteen months of their interview. In this way, our analysis is focussed on "new jobs". We should note that the people in our sample could be labour market entrants, people moving from unemployment to employment or people moving between jobs. We also impose an age restriction of 15 to 64. We pool the data across 18 years 1998 to 2015 and this results in a sample of over 60,000. Applying weights provided by the CSO allows us to present distributions which reflect the population of new job holders.

We begin our descriptive analysis by looking at the professional status of those who obtained a new job over time (Table 2). We are particularly interested in comparing across the economic cycle. Referring back to the discussion above, we take the years 2010 to 2012 as capturing the deepest part of the recession with 2014 and 2015 capturing the recovery. We can see from this table that there was an increase in the number of self-employed people during the recession years (to between 8 and 9 per cent), but this has fallen since the recovery to levels observed in the early noughties. Thus, most people who obtained a new job in the recovery period were hired as employees (92.6 per cent).

Table 2: New Job Entrants' Professional Status

	1998	*2000*	*2002*	*2004*	*2006*	*2008*	*2010*	*2012*	*2014*	*2015*
Professional Status:										
Self-Employed %	7.3	6.8	6.6	7.1	5.3	6.2	9.0	8.0	6.7	6.9
Employee %	91.9	92.6	92.7	92.3	94.3	93.1	90.0	91.4	92.6	92.6
Assisting Relations %	0.8	0.6	0.8	0.5	0.4	0.7	1.0	0.6	0.7	0.6
Total ('000)[1]	380.6	464.1	423.2	377.5	474.0	517.7	283.0	318.9	360.2	385.2

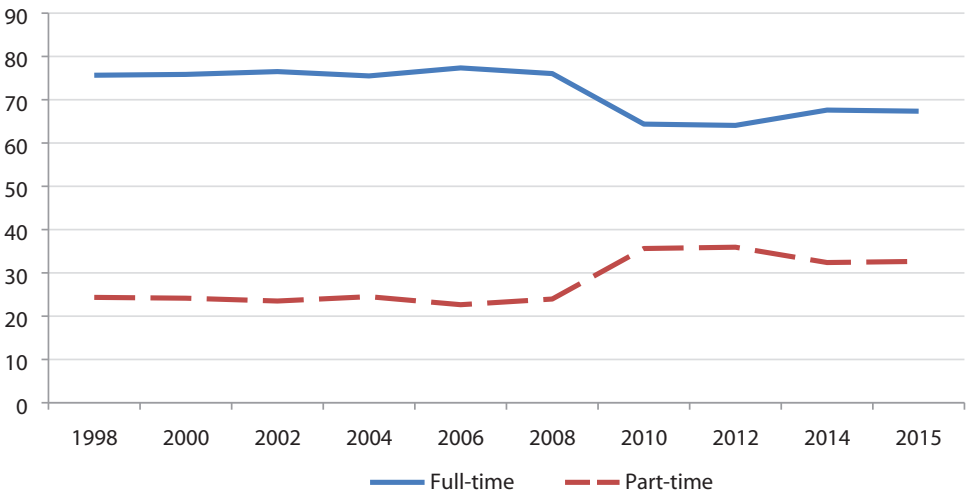
Source: Derived using Quarterly National Household Survey Q2 microdata.
Note: [1] Analysis based on all individuals aged 15-64 who obtained a job in the previous 18 months.

We turn now to our first key variables of interest and ask (a) what proportion of individuals with new jobs had full-time and part-time jobs and (b) how has this proportion changed over the economic cycle. Looking at Figure 2 we can see a clear pattern. Between 1998 and 2008, there was a remarkable stability in the split between part-time and full-time. Of employees[4] who obtained a new job in the 1998 to 2008 period, about 75 per cent were full-time and 25 per cent were part-time.

[4] Public sector job creation scheme employees excluded.

However, as labour market conditions deteriorated around 2008, the proportion getting full-time jobs fell to about 65 per cent in 2010. There is some move back to the earlier proportion after 2012 but the trajectory does not suggest a full move back to the pre-2008 proportion.

Figure 2: Full-Time/Part-Time Job Trends among New Employees: 1998 – 2015



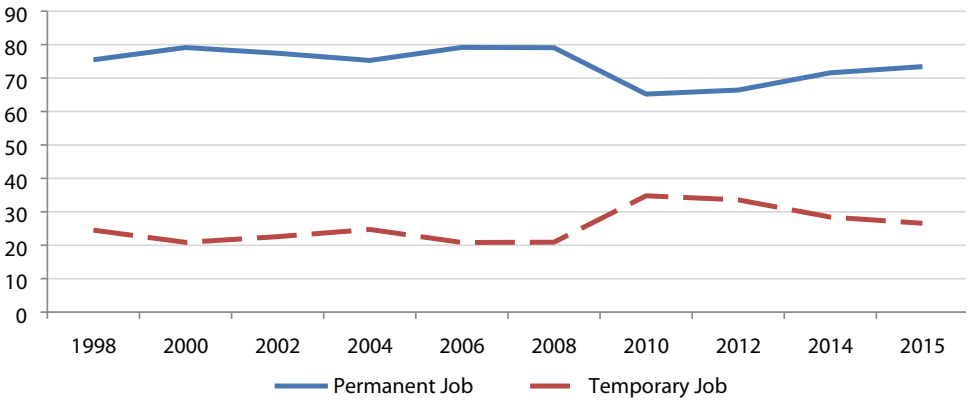
Source: Derived using Quarterly National Household Survey Q2 microdata.
Note: Analysis based on individuals aged 15-64 who obtained a job in the previous 18 months.

In Figure 3, we look at our second key variable which is temporary versus permanent contract. For the period 1998 to 2008, there is a remarkable similarity between Figures 2 and 3 in that the proportions of permanent and temporary are stable, just as they were for full-time and part-time. There is also a similarity in that there is a shift observed between 2008 and 2010 when the effect of the recession is evident and the proportion of new jobs which are temporary rise from 20.9 per cent in 2008 to 34.8 per cent in 2010. In Figure 3, when compared to Figure 2, we see evidence of a stronger reversal towards the earlier proportion. By 2015, the proportion of new jobs that are temporary has fallen to 26.6 per cent.

In Tables 3 and 4 we examine the percentages of part-time and temporary contract new employees respectively by gender, age, educational attainment, nationality, location and economic sector; and also how these proportions have changed over the business cycle.

Looking first at Table 3, a number of points can be observed. As is well-known, part-time work is more concentrated among females and this is evident in Table 3. However, the time trend is interesting. Among female new employees, 36.6 per

Figure 3: Permanent / Temporary Contracts among New Employees: 1998 – 2015



Source: Derived using Quarterly National Household Survey Q2 microdata.
Note: Analysis based on individuals aged 15-64 who obtained a job in the previous 18 months.

cent were part-time in 1998-2008. This was 2.56 times higher than the corresponding male proportion of 14.3 per cent. In the period 2010-2012, this ratio fell to 1.76 as the proportion of male new employees who were part-time grew more rapidly than the proportion for new female employees. Although the proportions fell for both males and females in 2014-2015, the ratio of the proportions also fell slightly, to 1.68.

Looking at one other row, it can be seen how the proportion of new employees with higher education with part-time jobs rose from 13.9 per cent in 1998-2008 to 24.8 per cent in 2010-2012. The proportion fell back in 2014-2015 (22.4 per cent) but remained well above the earlier level.

Looking at Table 4, it is interesting again to look at the gender dimension of temporary contracts. While the proportion of female new employees that are on temporary contracts always exceeds the proportion of males, the gap is not as pronounced as was the case with part-time contracts. And for both genders, there is stronger evidence of a movement in the direction of pre-crisis proportions.

In the context of the trend over time, one interesting group is people with low education (Table 4). The proportion of low educated new employees with temporary contracts rose during the crisis (from 21.3 per cent to 37.3 per cent) and has remained at the elevated level in the period 2014-2015 (37.4 per cent).

Before moving on to consider the trends in part-time and temporary work in a more formal econometric setting, we can look at trends in hours worked and union membership for new job holders over the period in question. In Figure 4, the patterns with respect to hours worked is shown. The figures shows a dip in hours worked in new jobs in the period 2008 to 2010 and then an increase after 2010.

Table 3: Proportion of Part-Time New Employees by Various Socio-Economic Characteristics: 1998 – 2015

	1998-2008	*2010-2012*	*2014-2015*
Gender:			
Female	36.6	47.4	43.9
Male	14.3	27.3	26.1
Age:			
15-19	46.9	74.2	74.1
20-24	17.1	41.3	37.7
25-34	15.3	26.8	24.4
35-44	29.0	33.3	32.1
45-54	37.5	41.9	37.9
55-64	47.7	54.6	52.0
Educational Attainment:			
Low	39.8	56.8	57.0
Medium	25.5	44.4	42.6
High	13.9	24.8	22.4
Nationality:			
Irish	27.0	38.1	35.1
Non-Irish	15.7	33.4	31.8
Location:			
Dublin	24.0	34.6	29.8
Rest of Country	25.6	38.3	36.9
Sector:			
Agriculture, Forestry and Fishing	20.8	25.4	26.8
Construction	7.1	27.5	30.6
Wholesale and Retail	39.4	51.2	48.6
Transportation and Storage	15.6	24.2	24.7
Accommodation and Food Storage	43.5	57.5	53.9
Information and Communication	10.2	14.9	9.9
Financial, Insurance and Real Estate	8.7	9.4	9.5
Professional, Scientific and Technical	10.8	19.1	14.4
Administrative and Support Services	28.6	42.9	38.9
Public Administration and Defence	14.7	25.1	23.1
Education	39.9	44.7	42.6
Health and Social Work	36.5	45.2	40.5
Creative, Arts and Entertainment	41.2	51.2	53.3
Other Services	42.3	53.5	54.4

Source: Derived using Quarterly National Household Survey Q2 microdata.

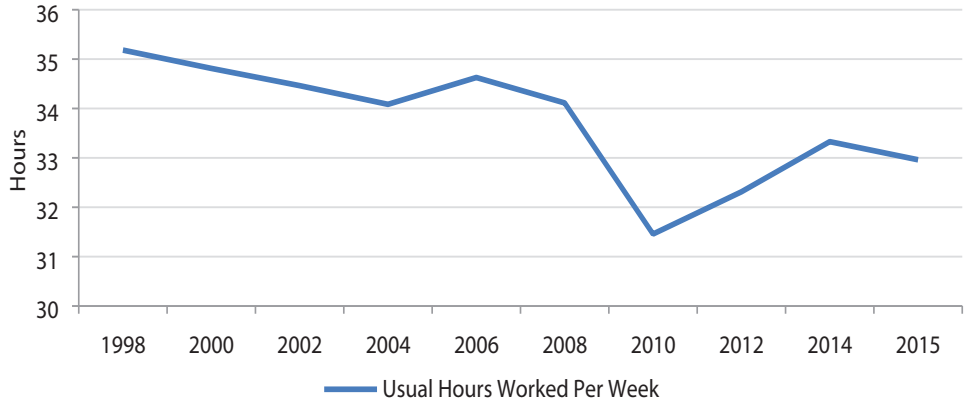
Table 4: Proportion of Temporary Contract New Employees by Various Socio-Economic Characteristics: 1998 – 2015

	1998-2008	*2010-2012*	*2014-2015*
Gender:			
Female	22.8	34.5	28.3
Male	17.7	28.8	24.5
Age:			
15-19	37.7	59.7	54.9
20-24	22.6	39.7	36.4
25-34	15.0	26.5	20.7
35-44	14.3	24.5	21.3
45-54	16.3	29.1	23.0
55-64	23.0	31.9	28.8
Educational Attainment:			
Low	21.3	37.3	37.4
Medium	19.7	34.1	28.5
High	19.1	27.8	21.6
Nationality:			
Irish	20.0	32.8	27.5
Non-Irish	20.9	27.2	22.0
Location:			
Dublin	18.6	31.2	21.8
Rest of Country	21.0	31.8	28.8
Sector:			
Agriculture, Forestry and Fishing	21.7	20.5	26.1
Construction	14.4	31.5	25.7
Wholesale and Retail	21.1	30.0	24.6
Transportation and Storage	13.9	21.7	19.5
Accommodation and Food Storage	26.5	37.2	31.0
Information and Communication	14.1	21.2	15.7
Financial, Insurance and Real Estate	15.2	20.4	17.9
Professional, Scientific and Technical	14.5	22.5	19.0
Administrative and Support Services	17.2	27.2	25.1
Public Administration and Defence	27.1	27.9	37.4
Education	37.7	53.7	48.3
Health and Social Work	25.3	35.7	25.9
Creative, Arts and Entertainment	26.2	40.7	36.4
Other Services	22.9	37.3	31.7

Source: Derived using Quarterly National Household Survey Q2 microdata.

These are consistent with the recession and recovery but there was also a fall-off in hours in the period 1998 to 2006, and between 2014 and 2015. These are less readily explained with reference to the economic cycle.

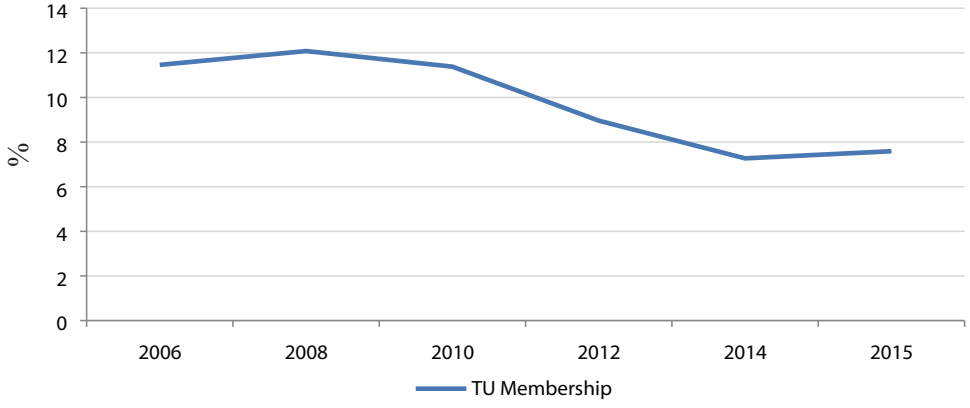
Figure 4: Usual Hours Worked Per Week among New Employees: 1998 – 2015



Source: Derived using Quarterly National Household Survey Q2 microdata.
Note: Analysis based on individuals aged 15-64 who obtained a job in the previous 18 months.

For union membership (Figure 5), we only have data from 2006 onwards but an interesting pattern emerges. There seems to have been a drop in the proportion of new jobs that are union jobs from 2008 to 2014. This stabilised into 2015 but clearly we cannot make any conclusion about the sustainability of this.

Figure 5: Trade Union Membership among New Employees: 2006 – 2015



Source: Derived using Quarterly National Household Survey Q2 microdata.
Note: Analysis based on individuals aged 15-64 who obtained a job in the previous 18 months.

IV ECONOMETRICS

Figures 2 and 3 revealed a certain amount about the patterns in atypical work in Ireland between 1998 and 2015, but we now want to explore the issue in a more formal econometric way.

For each individual in our data, we know whether their job is (a) full-time or part-time and (b) temporary or permanent. In order to identify the characteristics associated with being in one of these atypical employment arrangements, we need to estimate what is known as a binary choice model, which is where there is a selection being made between two discrete alternatives. In this case, the choice is between being employed part-time as opposed to full-time, or on a temporary contract instead of a permanent one. There are three main binary choice models that one can select from when modelling the choice between two discrete alternatives – a Linear Probability Model (LPM), a Probit Model or a Logit Model. Each of these models essentially describes the probability that $y = 1$ for some distribution function F (.):

$$P\{y_i = 1|x_i\} = F(x_i, \beta) \tag{1}$$

According to Equation (1), the probability of $y_i = 1$ depends on the vector x_i, which contains a matrix of explanatory variables.

The interpretation of binary choice models is often motivated by an underlying behavioural assumption. Specifically, that there is an unobserved latent propensity variable for each person i, y_i^*, which is a continuous indication of the degree of desire for some economic outcome. In this paper, the economic outcomes being examined are to be employed part-time (as opposed to full-time) or on a temporary contract (instead of a permanent contract). This latent variable for person i can be formally written as:

$$y_i^* = x_i'\beta + \varepsilon_i \tag{2}$$

As mentioned, we do not explicitly observe this underlying desire for each person $i(y_i^*)$, but we do observe a binary outcome y_i, such that $y_i = 1(y_i^* > 0)$. 1(.) is known as the indicator function and it takes the value of 1 if the condition within the brackets is satisfied, otherwise it takes a value of zero. In this paper, the binary outcome for person "y_i" is either the person observed to be working part-time or on a temporary contract, while "y_i^*" is capturing the intensity of desire to either work part-time or to be on a temporary contract for person i: the greater is the intensity of desire for one of these atypical employment arrangements, the more likely it is that we will observe the atypical employment arrangement being examined (i.e., $y_i = 1$ if and only if $y_i^* > 0$, otherwise $y_i = 0$). More formally, the latent variable representation of the binary choice model can be written as:

$$P\{y_i = 1\} = P\{y_i^* > 0\} = P\{x_i'\beta + \varepsilon_i > 0\} = P\{-\varepsilon_i \leq x_i'\beta\} = F(x_i'\beta) \quad (3)$$

In analysing the characteristics associated with the two atypical employment arrangements examined in this paper, we opt to estimate probit models. There is very little difference in the estimates produced by probit and logit models, while the LPM is utilised less often as it is not an ideal representation of a probability model.[5] In a probit model, the distribution function (i.e., $F(x_i'\beta)$) is the standard normal distribution function.

In this paper, and using the latent variable notation, the atypical employment arrangement probit models that are estimated can be written as follows:

$$\begin{aligned} y^* &= \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \varepsilon_i \\ y &= 1 \text{ if } y^* > 0 \\ y &= 0 \text{ if } y^* \leq 0 \end{aligned} \quad (4)$$

where y^* (i.e., the latent variable) is the intensity of desire for the particular atypical employment arrangement being examined, working part-time or on a temporary contract; y is the binary outcome that is observed; x_1 is the time variable that we include in our models; x_2 is a matrix of other explanatory variables (e.g., age, gender, educational attainment, etc.); and ε_i is the error term.

In the first set of binary probit models that we estimate, we focus on the full-time/part-time dimension and create a dichotomous dependent variable which takes a value one if the person is employed part-time and zero otherwise (which is full-time). We initially run a specification in which only time dummies are included, with these dummies capturing the recession period 2010-2012 and the recovery period 2014-2015. The pre-crisis period 1998 to 2008 is taken as the reference period. We then estimate a second specification in which we include a set of controls to capture gender, age, marital status, family type, educational attainment, geographic location, nationality and sector of employment.

The estimated coefficients produced through probit regression cannot be interpreted as measuring the effect on the dependent variable of a one-unit increase (decrease) in an explanatory variable because of the non-linear nature of the estimation procedure. Given this, marginal effects are calculated after estimating the probit models, using the mean of the explanatory variable as the base, as marginal effects give a measure of the size of the relationship between the dependent and explanatory variable.

The results from the two estimated specifications for the full-time/part-time atypical employment arrangement analysis are presented in Columns 1 and 2 in Table 5, with each regression weighted to ensure that the results are representative of the population being examined.

[5] See, for example, Kennedy (2008) or Verbeek (2002) for further information on each of these three binary choice models and the issues with the LPM.

Table 5: Probit Model of Part-time Employment for New Job Entrants[1] (Marginal Effects)

	Year-Only Specification	*Full Control Specification*
Year (Ref: 1998-2008)[2,3]		
2010-2012	0.118***	0.163***
	(0.007)	(0.008)
2014-2015	0.089***	0.141***
	(0.006)	(0.007)
Gender (Ref: Female)		
Male		–0.174***
		(0.005)
Age (Ref: 55-64)		
Age 15-19		0.006
		(0.015)
Age 20-24		–0.147***
		(0.011)
Age 25-34		–0.194***
		(0.011)
Age 35-44		–0.136***
		(0.009)
Age 45-54		–0.100***
		(0.010)
Marital Status (Ref: Married)		
Single		–0.044***
		(0.008)
Widowed		0.010
		(0.026)
Divorced		0.009
		(0.013)
Family Type (Ref: Couple, no children)		
Couple, Children		0.118***
		(0.008)
Lone Parent		0.173***
		(0.012)
Not in Family Unit, Lives Alone		0.047***
		(0.015)
Not in Family Unit, Lives with Others		0.032***
		(0.011)
Education (Ref: Low)		
Medium		–0.075***
		(0.005)
High		–0.179***
		(0.006)

Table 5: Probit Model of Part-time Employment for New Job Entrants[1] (Marginal Effects) (contd.)

	Year-Only Specification	*Full Control Specification*
Location (Ref: Dublin)		
Border		0.015*
		(0.008)
Midlands		–0.014
		(0.010)
West		–0.010
		(0.008)
Mid-East		–0.021***
		(0.007)
Mid-West		–0.009
		(0.008)
South-East		0.014*
		(0.008)
South-West		0.006
		(0.007)
Nationality (Ref: Irish)		
UK		–0.020
		(0.014)
EU15		–0.054***
		(0.015)
Rest of Europe		–0.035***
		(0.010)
US		0.047
		(0.045)
Australia		–0.108***
		(0.030)
Rest of World		0.170***
		(0.018)
Sector (Ref: Industry)		
Agriculture, Forestry and Fishing		0.175***
		(0.024)
Construction		0.008
		(0.012)
Wholesale and Retail		0.348***
		(0.010)
Transportation and Storage		0.127***
		(0.017)
Accommodation and Food Storage		0.424***
		(0.011)

Table 5: Probit Model of Part-time Employment for New Job Entrants[1] (Marginal Effects) (contd.)

	Year-Only Specification	*Full Control Specification*
Information and Communication		0.071***
		(0.016)
Financial, Insurance and Real Estate		–0.011
		(0.013)
Professional, Scientific and Technical		0.075***
		(0.015)
Administrative and Support Services		0.253***
		(0.016)
Public Administration and Defence		0.072***
		(0.019)
Education		0.362***
		(0.015)
Health and Social Work		0.255***
		(0.013)
Creative, Arts and Entertainment		0.389***
		(0.018)
Other Services		0.327***
		(0.018)
Unknown		0.128***
		(0.049)
Observations	61,764	52,469
Pseudo R-squared	0.00938	0.234

Source: Estimates derived using Quarterly National Household Survey Q2 microdata (1998-2015).

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

[1] The comparison group is new job entrants who obtained full-time employment.

[2] 1998 is excluded from the sector specification because there are no education data in the QNHS micro datafile for 1998; thus 2000-2008 is the reference year for this specification.

[3] We tested to see if the year effects were statistically different from each other. They were in each specification (at the 1 per cent level in the year-only specification and at the 5 per cent level in the sector specification).

As can be seen, the positive and significant coefficient for the time-period dummy variable 2010-2012 provides evidence that part-time employment contracts became more prevalent during the recession. This is perhaps unsurprising and the more interesting question is whether this higher prevalence persisted into the recovery phase. The coefficient for the 2014-2015 dummy variable is also positive and significant so this greater prevalence of part-time contracts for new job entrants

did indeed persist into the recovery. The coefficient has fallen between 2010-2012 and 2014-2015 and the difference is statistically significant. Hence, the trend towards more part-time new jobs seems to have weakened in the recovery phase, but as of 2014-2015 the labour market had not returned to pre-crisis levels along this dimension.

In Table 5 (Column 2), we also present the results of a second regression in which we control for a wide range of factors in addition to the time-period dummy variables. We do this because it is possible that the estimated effects just discussed could have been the result of composition effects as opposed to true time-period effects. The scale of collapse in the Irish labour market was such that new job holders in the post-crisis phase may have differed from earlier new job holders, partly in terms of their individual characteristics but also in terms of the sectors in which they worked. By controlling for a wide range of factors, we can reduce this potential problem.

The coefficients on the time-period dummy variables increase when all the additional controls are added. Once again, we see a stronger effect in the 2010-2012 period compared to 2014-2015, but the finding of the persistence in the higher prevalence of part-time jobs even in the recovery phase remains. The other coefficients in the regression are generally as expected. For example, men are less likely to be in part-time jobs as are more highly educated people. Possibly the most interesting findings with respect to these other coefficients is with respect to the various immigrant groups. Immigrants from Europe, other than the UK, are shown to be less likely to be in part-time work. We know from other studies such as Barrett and Duffy (2008) that immigrants from Europe had high employment rates. The fact that they were also more likely to be full-time adds to the sense of this immigrant group adding significantly to the workforce in terms of hours worked. By contrast, the observation that immigrants from the "rest of the world" (including Africa) were more likely to be part-time is consistent with the findings from studies such as Barrett and McCarthy (2007) which pointed to relative labour market disadvantage for this group.

We next look at the question of temporary and permanent contracts and we follow the approach just described for part-time and full-time. We begin by running a probit regression in which the dependent variable is equal to 1 if the individual has a temporary contract and is zero otherwise (permanent). The results from this work are presented in Table 6. In the first regression we just include the time-period dummy variables (Column 1) and we then go on to include a wide set of additional controls (Column 2) to try to account for any compositional effects.

As was the case when we compared Figures 2 and 3, there are striking similarities between the results shown in Tables 5 and 6. As in Table 5, we again find in Table 6 that the prevalence of atypical work (this time as indicated by a temporary contract) increased in the recession. And although the size of the effect

Table 6: Probit Model of Temporary Employment Contracts for New Jobs Entrants[1] (Marginal Effects)

	Year-Only Specification	*Full Control Specification*
Year (Ref: 1998-2008)[2,3]		
2010-2012	0.123***	0.152***
	(0.007)	(0.007)
2014-2015	0.055***	0.091***
	(0.006)	(0.007)
Gender (Ref: Female)		
Male		–0.014***
		(0.005)
Age (Ref: 55-64)		
Age 15-19		0.121***
		(0.017)
Age 20-24		–0.033**
		(0.013)
Age 25-34		–0.115***
		(0.012)
Age 35-44		–0.098***
		(0.010)
Age 45-54		–0.071***
		(0.011)
Marital Status (Ref: Married)		
Single		0.060***
		(0.007)
Widowed		0.031
		(0.030)
Divorced		0.014
		(0.014)
Family Type (Ref: Couple, no children)		
Couple, Children		0.050***
		(0.007)
Lone Parent		0.030***
		(0.010)
Not in Family Unit, Lives Alone		0.045***
		(0.013)
Not in Family Unit, Lives with Others		0.039***
		(0.009)
Education (Ref: Low)		
Medium		–0.018***
		(0.006)

Table 6: Probit Model of Temporary Employment Contracts for New Jobs Entrants[1] (Marginal Effects) (contd.)

	Year-Only Specification	*Full Control Specification*
High		–0.029***
		(0.007)
Location (Ref: Dublin)		
Border		0.012
		(0.008)
Midlands		–0.018*
		(0.010)
West		0.082***
		(0.009)
Mid-East		0.019**
		(0.008)
Mid-West		0.083***
		(0.009)
South-East		0.010
		(0.008)
South-West		0.069***
		(0.007)
Nationality (Ref: Irish)		
UK		–0.034**
		(0.013)
EU15		0.074***
		(0.015)
Rest of Europe		–0.000
		(0.010)
US		0.068*
		(0.040)
Australia		0.169***
		(0.043)
Rest of World		0.102***
		(0.016)
Sector (Ref: Industry)		
Agriculture, Forestry and Fishing		0.101***
		(0.021)
Construction		–0.002
		(0.009)
Wholesale and Retail		0.009
		(0.008)
Transportation and Storage		0.015
		(0.013)

Table 6: Probit Model of Temporary Employment Contracts for New Jobs Entrants[1] (Marginal Effects) (contd.)

	Year-Only Specification	*Full Control Specification*
Accommodation and Food Storage		0.067***
		(0.009)
Information and Communication		–0.010
		(0.012)
Financial, Insurance and Real Estate		–0.006
		(0.012)
Professional, Scientific and Technical		0.024**
		(0.012)
Administrative and Support Services		0.016
		(0.013)
Public Administration and Defence		0.159***
		(0.018)
Education		0.327***
		(0.013)
Health and Social Work		0.091***
		(0.011)
Creative, Arts and Entertainment		0.143***
		(0.017)
Other Services		0.077***
		(0.015)
Unknown		0.144***
		(0.040)
Observations	61,561	52,266
Pseudo R-squared	0.00879	0.0783

Source: Estimates derived using Quarterly National Household Survey Q2 microdata (1998-2015).

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

[1] The comparison group is new job entrants that obtained permanent employment contracts.

[2] 1998 is excluded from the sector specification because there are no education data in the QNHS micro datafile for 1998; thus, 2000-2008 is the reference year for this specification.

[3] We tested to see if the year effects were statistically different from each other and they were in each of the estimated specifications (at the 1 per cent level of significance).

is smaller in the recovery phase, and statistically significantly so, the positive and significant coefficient for the time-period dummy variable 2014-2015 suggests that the greater likelihood of a new job being temporary persisted into the recovery.

When we include the additional controls, the size of the estimated time-period effects increase, again mirroring Table 5.[6]

Our findings with respect to part-time and temporary contracts prompted us to look more deeply at these patterns so we ran an additional series of regressions which capture some further issues. We first looked at the group whose new jobs had both of the atypical work characteristics explored above, temporary and part-time. In our next probit regression we gave a value of 1 to this group and a value of zero to all others. Hence, our "zero" group now includes all people with permanent contracts (whether full-time or part-time) and all with full-time work (whether temporary or permanent). In this way we are focussing on the most disadvantaged group.

The results are reported in Table 7 where we again include only the time-period dummy variables initially (Column 1), but then include a broader set of controls (Column 2).[7] Once again, the patterns found in Tables 5 and 6 are repeated. The prevalence of this two-dimensional atypical work increased with the recession and persisted into the recovery, albeit at a more modest level.

Table 7: Probit Model of Part-Time Temporary Employment Contracts for New Job Entrants[1] (Marginal Effects)

	Year-Only Specification	*Full Control Specification*
Year (Ref: 1998-2008)[2,3]		
2010-2012	0.083***	0.099***
	(0.005)	(0.006)
2014-2015	0.050***	0.074***
	(0.005)	(0.005)
Observations	61,764	52,469
Pseudo R-squared	0.0114	0.166

Source: Estimates derived using Quarterly National Household Survey Q2 microdata (1998-2015).

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

1 The comparison group is new job entrants that obtained either full-time permanent or temporary employment, or part-time permanent employment.

2 1998 is excluded from the sector specification because there are no education data in the QNHS micro datafile for 1998; thus, 2000-2008 is the reference year for this specification.

3 We tested to see if the year effects were statistically different from each other and they were in each of the estimated specifications (at the 1 per cent level of significance).

6 As was the case with part-time/full-time analysis, immigrants from the "rest of the world" (including Africa) are much more likely to have temporary contracts, consistent with labour market disadvantage.

7 The results for the covariates included in the full specification are not presented in Table 5, but are available from the authors on request.

Our next avenue was to look within the part-time group and to distinguish between those who are involuntarily part-time and voluntarily so. Those working part-time on an involuntary basis were identified in the QNHS from a question that asked people their reasons for working part-time. We classified those who indicated that they "could not find a full-time job" to be involuntary part-time employed. There was a change made to the variable that captures the reasons for working part-time in Q1 2006; thus, the 1998-2005 data are not comparable with the date from 2006 onwards. Given this, our analysis of involuntary part-time employment is restricted to the 2008 to 2015 time period.

We present our results on involuntary part-time employment in Table 8.[8] The reference group is now full-time employees. Yet again, the earlier pattern emerges – an increase in the probability of a new job being involuntarily part-time with the recession and this persisting into the recovery. We should note that we also looked specifically at involuntary part-time people with temporary contracts and the earlier patterns were also present.

Table 8 Probit Model of Involuntary Part-time Employment for New Job Entrants[1] (Marginal Effects)

	Year-Only Specification	*Full Control Specification*
Year (Ref: 2008)[2,3]		
2010-2012	0.207***	0.200***
	(0.010)	(0.010)
2014-2015	0.177***	0.171***
	(0.009)	(0.009)
Observations	15,476	15,476
Pseudo R-squared	0.0437	0.187

Source: Estimates derived using Quarterly National Household Survey Q2 microdata (1998-2015).

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

1 The comparison group is new job entrants that obtained full-time employment.

2 There was a change in the variable used to capture the reasons for working part-time in Q1 2006; thus, the 1998-2005 data are not comparable with the date from 2006 onwards. Given this, the reference year is 2008, which captures people who got new jobs between Q4 2006 and Q2 2008. This is also the reason for the smaller sample in this analysis.

3 We tested to see if the year effects were statistically different from each other and they were in each of the estimated specifications (at the 5 per cent level of significance).

8 The results for the covariates included in the full specification are available from the authors on request.

Before concluding, we can report on two further sets of regressions which provide further insights into the nature of new jobs in the recession and the recovery. We looked at whether new jobs were more likely to be self-employed and followed our earlier approach of running regressions initially with just time-period dummies and then with additional controls. The results are shown in Table 9[9] and some differences with the earlier results are found. While we see an increase in the likelihood of new jobs being self-employed in the recession, this is not the case in the recovery. In fact, once the extra controls are added we see a lower likelihood of self-employment, compared to the pre-crisis period, in the recovery phase.

Table 9: Probit Model of Self-Employment for New Job Entrants[1] (Marginal Effects)

	Year-Only Specification	*Full Control Specification*
Year (Ref: 1998-2008)[2,3]		
2010-2012	0.020***	0.005**
	(0.004)	(0.002)
2014-2015	0.004	–0.007***
	(0.003)	(0.002)
Observations	66,693	56,595
Pseudo R-squared	0.00134	0.168

Source: Estimates derived using Quarterly National Household Survey Q2 microdata (1998-2015).

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

1 The comparison group is employees.

2 1998 is excluded from the sector specification because there are no education data in the QNHS micro datafile for 1998; thus, 2000-2008 is the reference year for this specification.

3 We tested to see if the year effects were statistically different from each other and they were in each of the estimated specifications (at the 1 per cent level of significance).

Finally, in Table 10[10] we look at trade union membership and an interesting picture emerges. In all the earlier regressions, we found a pattern of effects emerging in the recession and these effects easing in the recovery. In Table 10, we see the effects intensifying in the recovery, with the likelihood of new jobs being unionised falling further as we move from recession to recovery.

9 The results for the covariates included in the full specification are available from the authors on request.

10 The results for the covariates included in the full specification are available from the authors on request.

Table 10: Probit Model of Trade Union Membership for New Job Entrants (Marginal Effects)

	Year-Only Specification	*Full Control Specification*
Year (Ref: 2006-2008)[1,2]		
2010-2012	–0.016***	–0.023***
	(0.004)	(0.004)
2014-2015	–0.042***	–0.045***
	(0.004)	(0.003)
Observations	26,405	26,405
Pseudo R-squared	0.00612	0.117

Source: Estimates derived using Quarterly National Household Survey Q2 microdata (1998-2015).
Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
[1] 2006-2008 is the reference year in this specification because trade union membership information is not available for individuals that entered a new job prior to Q2 2003.
[2] We tested to see if the year effects were statistically different from each other in each specification, and they are (at the 1 per cent level of significance).

V DISCUSSION

The analysis presented above has generally found the following. Taking part-time work and temporary contracts as indicators of atypical work, Ireland experienced an increase in atypical work among the holders of new jobs in the recession. In the recovery of 2014-2015, there has been a lessening in this trend. However, the likelihood of being in atypical work among new job holders in 2014-2015 remained above the pre-crisis level. In an international context, these results are noteworthy. Whereas the work of Eichhorst and Tobsch (2013) for Germany, or Gialis and Leontidou (2016) for the Mediterranean countries, might suggest that the trend towards atypical work is moving in one direction only, the picture for Ireland is more nuanced.

A number of issues arise. First, it could be argued that any jobs were better than no jobs as Ireland was in recession and so the increase in atypical jobs may have been a "price worth paying" to see employment rising again. What is more, the labour market worked in such a way that it was possible to generate atypical jobs and this may be a positive reflection on the institutions and mechanisms at work in Ireland. A strong form of this line of thinking would say that Ireland may only have created jobs at the pace that was observed precisely because many were temporary and/or part-time. This would be in line with Eichhorst and Tobsch (2013).

The second issue concerns the apparent persistence of the increased likelihood of atypical work in the recovery, albeit to a weakening degree. Before drawing any strong conclusions, we should note that the timeframe we are using is short and so we certainly cannot conclude that Ireland is in a new phase where atypical work is more likely. Nevertheless, the results raise the possibility that economic recovery will not, of itself, lead to more full-time and permanent jobs. Hence, it will be necessary to monitor this trend and to be ready to act if atypical work is viewed as a problem. It may not be the case that policy would aim to restrict atypical work but instead would try to equip individuals so that they were not negatively affected by it and that they can transition to more standard contracts as shown by Couprie and Joutard (2017). Whatever the policy response, the fact remains that countries' labour markets should be measured not only in terms of the number of jobs they create but also by the quality of those jobs.

This question of transitions from atypical work to more standard employment contracts prompts one final thought on the limitations of the QNHS for this analysis. While there is a panel dimension to the QNHS, the maximum duration for an individual to be in the survey is 15 months. This may not provide sufficient time for people to make the desired transition. For this reason, further developments of this work may need to look to panel data where individuals are observed over a longer time period.

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