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MEASURING CONTINGENT EMPLOYMENT IN IRELAND

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ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AROP	at risk of poverty
BLS	Bureau of Labor Statistics
CEDEFOP	European Centre for the Development of Vocational Training
CWS	Contingent Worker Survey
ESJS	European Skills and Jobs Survey
EU SILC	European Union Survey of Income and Living Conditions
ICTU	Irish Congress of Trade Unions
ISCED	International Standard Classification of Education
PSM	propensity score matching
QNHS	Quarterly National Household Survey
RPCWS	Rand–Princeton Contingent Workers Survey

EXECUTIVE SUMMARY

The incidence of contingent employment in Ireland

The term 'contingent employment' generally refers to an employment relationship that is non-permanent. There is a belief that recent years have seen a substantial emergence of contingent employment as a facet of modern labour markets, but there is little work that has documented or measured the incidence of contingent employment in Ireland. This report addresses this deficit by measuring the incidence of contingent employment in Ireland, assessing the extent to which this is changing over time and profiling the individuals most likely to be contingent workers. The report uses three datasets for the analysis: the Quarterly National Household Survey (QNHS), the EU Survey of Income and Living Conditions (EU SILC) and CEDEFOP's European Skills and Jobs Survey (ESJS).

The two principal components of contingent employment in Ireland are employees on temporary contracts and freelancers. The incidence of contingent employment ranged from 8 to 9 per cent of total employment between 1998 and 2005, before increasing to over 10 per cent between 2011 and 2013. It had fallen back towards its pre-recession level by 2016. Therefore, the evidence does not support the view that the incidence of contingent employment has been increasing steadily over time in Ireland.

Freelance employment has been increasing steadily in Ireland since 1998; however, freelancers are a relatively minor component of the Irish labour market, accounting for just over 2 per cent of total employment (employment + self-employment) and 12 per cent of self-employment in 2016.

Temporary employees account for 80 per cent of contingent workers. Temporary employment has not shown an increasing trend over recent years. It increased somewhat during the post-recession period of 2011 to 2013 to just over 8 per cent of total employment; however, the rate had returned to its long-run average of 7 per cent of total employment in 2016.

The composition of contingent employment in Ireland

The data suggest that, for the vast majority of workers, temporary employment status is not a choice or a preferred option, given that only 19.5 per cent in 2016 were not seeking a permanent contract.

Relative to the total workforce, freelance workers are more heavily concentrated in the 45 to 54 age category, while workers on temporary contracts are much more likely to be aged 24 to 34. With respect to gender, freelancers are more likely to be

male; non-nationals were not found to be more heavily concentrated than average within either form of contingent employment. In terms of education, attainment levels among temporary workers align with the average patterns observed for all workers; however, freelancers are more likely to be educated to tertiary level compared to the workforce average.

With regard to sector of employment, the evidence suggests that temporary workers are distributed throughout the economy, but they are somewhat overrepresented in Education and under-represented in Agriculture, Manufacturing and Wholesale and Retail. In terms of firm size, we found no tendency for temporary employment to be heavily concentrated among smaller firms; temporary workers were found to be distributed across organisations of all sizes. Temporary workers were much more likely to be working part-time compared to the workforce average.

With respect to occupation, 45 per cent of freelancers were in Professional occupations, 14 per cent were Technicians or Associate Professionals, and 15 per cent worked in Sales and Service occupations. Taken as a whole, the QNHS data suggest that freelancers tend to be older, well-educated individuals who offer their services predominantly within professional and skilled labour markets.

Temporary workers were found within all occupations; however, relative to the overall workforce they were under-represented among Managers and Technicians and Associate Professionals and over-represented within Sales and Service occupations. Taken as a whole, the data would suggest that temporary employment is not a predominantly low-skilled occupation, with temporary workers found across all sectors, occupations and organisational sizes.

Contingent employment in Ireland compared to the EU average

Comparative data show that despite some increases in contingent employment following the recession, Ireland remained almost 4 percentage points lower than the EU average in 2014. The Irish rate of contingent employment in 2014 was 80 per cent higher than the rate in the UK but low compared to countries hit strongly by the crisis, such as Spain, Portugal and Italy. In Poland nearly one-third of those at work are in contingent employment.

With respect to the individual components of contingent employment, despite increases post-recession, temporary employment in Ireland was still one quarter lower than the EU average in 2014. The Irish temporary employment rate in 2014 stood at just 40 per cent that of Spain and less than a third of the rate in Poland. In contrast, the rate of temporary employment in Ireland was approximately one-third higher than the rate reported for the UK in 2014.

The data showed that despite increasing over the period 2006 to 2010, freelance

employment in Ireland remained below both the EU average and the rates apparent in France, Spain, Italy, Portugal and Poland. As was the case for temporary employment, the rate of freelance employment exceeded only that evidenced within the UK over the period.

We also assess the likely future path of contingent employment in Ireland to 2025 using detailed sectoral employment projections and information on the existing trends in contingent employment. Our projections show the share of contingent employment in total employment rising from 9 per cent in 2016 to 10 per cent in 2025, with this increase driven by a rise in the share of freelancers.

The results from the econometric analysis largely reflected the descriptive evidence, with males 4 percentage points more likely to be temporary, while individuals with tertiary education had no relative advantage compared to those with primary or less educational attainment. Part-time workers were 8.5 percentage points more likely to be on temporary contracts, which were more common among workers with limited work experience. Finally, in terms of occupation, relative to individuals in Elementary occupations, only managers are less likely to be on temporary contracts, confirming the use of such contracts throughout the occupational spectrum in Ireland.

Comparing the results from the Irish model with that based on data for the EU 27 in 2014, a number of clear differences emerge. Specifically, temporary employment within the EU 27 is more male dominated and concentrated among workers with the lowest levels of educational attainment. Temporary employees in the EU 27 are more likely to be single (and live in single-person households) and to originate from a country outside of the EU, relative to the Irish case. In terms of sector, temporary contracts are much more likely to exist in the Public and Other Services sectors with the EU 27. Finally, temporary contracts are much more prevalent within Elementary occupations and small firms in the EU 27 than in Ireland.

Taken as a whole, the characteristics of temporary contracts in the EU 27 are much more consistent with those of low or minimum waged jobs relative to the Irish case. This conclusion is supported by the results from a wage equation model which demonstrated that, after controlling for a range of other factors, temporary workers in Ireland experienced a pay penalty of approximately 17 per cent in 2014 relative to their permanent counterparts. While the pay penalty incurred by temporary employees in Ireland during 2014 was substantial, it was less than half the comparable EU 27 estimate for the same period.

Both across the EU and in Ireland a wage penalty exists for those in temporary employment. Across the EU 27 a substantial 29% wage penalty was in existence in 2014, a fall from the 2006 figure of 35%. The penalty in Ireland in 2014, at 21%,

was below the EU 27 average but had risen from 18% in 2006. The likelihood of living in a household at risk of poverty is also elevated for those in temporary employment – in 2014 temporary employees across the EU were 9 percentage points more likely to live in a household at risk of poverty, with the Irish rate slightly below this at 7 percentage points.

Contingent employment and labour market outcomes

Employees on temporary contracts do not suffer from lower levels of job satisfaction relative to their permanent counterparts. Workers on temporary contracts place much greater weight on the opportunity to gain experience and a much lower emphasis on job security and pay, which goes some way towards explaining the lack of a negative job satisfaction effect despite the presence of a substantial temporary employment pay penalty and elevated poverty risk.

The data on labour market transitions reveal that freelancers tend not to change status over the short term, with almost 95 per cent of individuals identified as freelancers in a particular quarter maintaining that status three months later. We see much more movement among temporary workers: of those identified as such, almost 20 per cent had changed status by the following quarter. Of individuals moving out of temporary employment, 53 per cent moved into permanent employment while 42 per cent became unemployed or inactive. Therefore, over the very short term, temporary employees are almost as likely to move out of employment as into permanent positions.

Our models suggest that individuals on temporary contracts were only marginally more likely to transition to a permanent contract than unemployed persons in 2016. Individuals on temporary contracts had a 1.6 per cent probability to have made a transition to permanent status within three months in 2016 compared to 1.4 per cent for unemployed persons. The analysis suggests that, at least in the very short run, temporary employment in Ireland does not constitute a stepping stone to permanent employment status.

SECTION 1

Introduction

Contingent workers are workers who are in temporary or non-standard working arrangements. Such workers are generally hired, and paid, to undertake a specific task for a specified period of time without acquiring the rights and benefits enjoyed by regular employees of the organisation or firm. It is generally accepted that contingent employment is on the rise across most labour markets as many employers and workers seek increased flexibility in their working arrangements. However, it is also accepted that contingent employment status is not welcomed by all workers falling into the category, as it can also be associated with negative aspects such as a lack of certainty around income flows and low levels of legal protection.

No standard definition of contingent employment exists, and the measurement approach will tend to vary according to the organisation of labour and contractual arrangements that pertain within countries. Within a European framework, contingent workers will generally include categories of workers such as freelancers, independent contractors, consultants, or other outsourced and non-permanent workers who are hired on a per-project basis. Contingent workers can work on site or remotely. There is a belief that recent years have seen a substantial emergence of contingent employment as a facet of modern labour markets, yet there is little work that has documented or measured the incidence of contingent employment and certainly none that we could find for Ireland. This report seeks to address this deficit by measuring the incidence of contingent employment in Ireland, assessing the extent to which this is changing over time and profiling the individuals most likely to be contingent workers.

The report is structured as follows. Section 2 presents a brief overview of the relevant literature, Section 3 discusses the methodology and presents descriptive evidence of contingent employment in Ireland, Section 4 presents an international comparison, Section 5 presents results from multivariate models that profile contingent workers in Ireland, Section 6 details the results of our forecasting exercise, while Section 7 consists of a summary and conclusions.

SECTION 2

Literature review

While many reasons have been put forward for the growth in contingent employment internationally, including globalisation, advances in technology and the decline in trade unions, it seems that the onset of the Great Recession had a particular effect in Ireland. Between 2006 and 2012, the proportion of new jobs in Ireland with fixed-term contracts increased from just over 25 per cent to almost 50 per cent (OECD, 2014). This may be because employers were reluctant to give permanent contracts in a time of increasing uncertainty, but the level of labour market flexibility may also play a role. Ireland ranks as sixth in terms of labour market flexibility among OECD members,[1] with the UK as the only country in the EU with a more flexible labour market (MTU, 2012).

The lack of stringent labour market regulation may lead to a rise in particularly risky and insecure forms of work, such as zero-hour contracts. Employees on zero-hour contracts are expected to be available for work when needed but have no guarantee of any work. While this type of contract has increased in the UK, with roughly 2.5 per cent of employees in 2015 on zero-hour contracts (ILO, 2016), there is little evidence of their existence in Ireland. The European Parliament (2016) finds that zero-hour contracts are prevalent in the UK, Austria and the Netherlands. O'Sullivan et al. (2015) find evidence of so-called 'if and when contracts' in Ireland: under such contracts workers are not guaranteed any hours of work but are not legally obliged to be available for work. However, the estimate by O'Sullivan et al. (2015) appears to be based on whether an individual reports variable working hours, rather than an assessment of their contractual status. While the apparent increase in the proportion of temporary workers since the recession in Ireland has been documented, such changes have impacted only a minority of workers given that less than 1 in 10 individuals in Ireland in 2015 were in temporary employment (Hudson-Sharp and Runge, 2017).

There are benefits and drawbacks of contingent employment for both employers and employees. The existence of a contingent workforce allows employers to quickly respond to fluctuations in labour demand, fill temporary positions rather easily and hire workers to work unsocial hours without having to pay high rates in return. Employees on contingent work contracts benefit from increased flexibility, a better work–life balance, self-autonomy and increased life satisfaction, but mainly only if this type of work is voluntary. On the other hand, employees may feel less attached to the firm and have lower motivation and productivity (Battisti and Violante, 2013). Furthermore, in the majority of cases, individuals do not

[1] This index is based on 21 questions related to protection of permanent workers against individual and collective dismissals, specific requirements for collective dismissal, and regulation on temporary forms of employment. The index goes from 0 to 6, with a lower score corresponding to greater flexibility.

choose to accept this type of work; for example, in 2014, over 60 per cent of temporary workers in France and Ireland, and 90 per cent in Spain, stated that they worked under such contracts because they could not find a permanent job (Schmid and Wagner, 2016). The European Parliament (2016) found that involuntary temporary work and involuntary part-time work increased significantly in Ireland and Latvia. In terms of the specific disadvantages, workers in non-standard forms of work face unpredictable and irregular work hours and income and increased levels of job insecurity, and may lack entitlement to benefits. The European Parliament (2016) found that the rise in alternative work led to a substantial increase in job insecurity in Ireland, Spain, Portugal, Greece and Latvia. In addition, there is evidence that temporary workers incur a wage penalty relative to permanent employees (Bosio, 2014; Jahn and Pozzoli 2013). The combination of job insecurity, low wages, less attachment and lower employee morale may lead to lower job satisfaction and increased work stress. De Cuyper et al. (2008) conducted a large literature review on the psychological impacts of temporary employment and reported mixed evidence, with many studies finding temporary workers have lower levels of job satisfaction compared to permanent workers (Hall, 2006; Forde and Slater, 2006), while others found evidence of higher job satisfaction among temporary workers (Wooden, 2004; De Cuyper and De Witte, 2005) or no significant difference (Bernhard, 2001; Krausz and Stainvartz, 2005).

It is also often argued that contingent employment provides a route into the labour market and can be a 'stepping stone' to more secure forms of work by providing essential work experience. The evidence on transitions from temporary to permanent contracts is limited; for example, between 2012 and 2013, only 23% of temporary workers in the EU moved from temporary to permanent jobs. However, there was quite a lot of variation across countries, with the figure as low as 10% in France and just over 60% in the UK (European Commission, 2016). Esteban-Pretel et al. (2011), using a structural model of Japanese workers, found little evidence that contingent employment leads to a permanent job but did find that those in contingent employment have lower levels of welfare and that this effect persists over time. Moreover, Autor and Houseman (2010), examining data on a unique welfare-to-work policy in Detroit, found that temporary help jobs decrease future employment outcomes and wages. Individuals on temporary contracts may find it difficult to find a more permanent job due to their unpredictable work schedule and also because they are less likely to receive job training (Bassanini et al., 2007) or promotion (Zeytinoglu et al., 2004).

Contingent work is most prevalent among females, young workers, immigrants and the low educated (Voss et al., 2013; ILO, 2016; OECD, 2014). The concentration of such individuals among the contingent workforce may be partly explained by these groups facing barriers to labour market entry such as discrimination, lack of experience and low skills. Temporary contracts may be used as a screening device so that the employer can learn about the ability levels of workers with limited job experience. Finally, the higher concentration of such workers will also be partly

driven by the fact that the sectors that have seen a flourishing in contingent work contracts, such as the retail, hospitality, health and education sectors (Brinkley, 2013; O'Sullivan et al., 2015), are those which predominantly tend to employ females, young people and non-nationals.

A report on temporary employment published by ICTU (Irish Congress of Trade Unions) in 2017 using the Quarterly National Household Survey (QNHS) found evidence that the percentage of workers in temporary employment increased throughout the recession, from 7.2% in 2008 to a peak of 8.7% in 2011, but since then has seen a steady decline, with 7.1% of the workforce in temporary employment in 2016. However, they note that despite the overall decrease in temporary employment, the number of part-time temporary employees was higher in 2016 (4.1%) than in 2008 (3.5%). They find a similar picture for the proportion of the workforce who are classified as self-employed but without employees. In 2008, 10.3% of workers were self-employed without employees; this rose to 11.3% during the height of the recession and subsequently fell to 10.4% in 2016. There is evidence that the proportion of voluntary temporary workers has decreased substantially over the past decade. Over 50% of temporary workers in 2016 said that they were in temporary employment because they could not find permanent work. The ICTU report finds that those in temporary employment are more likely to be female, aged between 15 and 34, and educated to below degree level, and to work in the Public Administration, Education and Health sectors. The report also highlights that 8% of workers' usual hours varied from week to week or month to month.

SECTION 3

Data and descriptive analysis

The only consistent approaches to measuring contingent employment relate to the USA and the Contingent Worker Survey (CWS), carried out by the US Bureau of Labor Statistics (BLS) in 1995, 1997, 1999, 2001 and 2005[2] and the Rand–Princeton Contingent Workers Survey (RPCWS), carried out in 2015 in order to fill the data void for the US. Both the CWS and the RPCWS defined contingent employment as temporary worker help agencies, on-call workers, contract workers and independent contractors or freelancers. Katz and Krueger (2016), analysing the CWS and the RPCWS, estimate that the employment share of contingent workers increased from 10.1 to 15.8 per cent between 2005 and 2015.

Due to the absence of specific survey instruments, such as the CSW and RPCWS, it is much more difficult to measure the phenomenon in Ireland and any approach must seek to establish a definition of contingent employment that both appropriately reflects working practices and can be captured using pre-existing datasets. Within the Irish labour market, the bulk of contingent workers are either employees on temporary contracts or freelancers. Temporary workers can be easily identified with the Quarterly National Household Survey and also EU SILC. The situation with respect to measuring the incidence of freelancers is somewhat more complex but resolvable and, as with temporary workers, we are confident that they are identifiable within the QNHS and EU SILC datasets. According to the European Commission (2014), freelancers can be defined as self-employed persons without employees and active in the service sectors. However, as liberal professionals[3] are specified separately, solo entrepreneurs working as liberal professionals are not included in the EC definition. Freelancers are solo entrepreneurs active in the following sectors:

- information and communication;
- financial and insurance activities;
- administrative and support service activities;
- education;
- arts, entertainment and recreation;

[2] The BLS conducted a survey on contingent and alternative employment in the May 2017 Current Population Survey.

[3] According to the European Commission: 'The liberal professions include lawyers, notaries, engineers, architects, doctors, dentists and accountants, amongst others. They all require special training in the arts or sciences, and their activities are usually closely regulated by national governments or professional bodies.' https://ec.europa.eu/growth/smes/promoting-entrepreneurship/we-work-for/liberal-professions_en

- other service activities.

Not all elements of contingent employment can be separated out under this approach; for instance, on-call workers cannot be identified. To the extent that this grouping will contain the group of workers on 'now and then' or 'zero hours', this is a weakness of the study, particularly given the level of debate around such contracts in recent years. Nevertheless, it is likely that the bulk of individuals with such working arrangements will be employed on temporary contracts; therefore, our approach will still provide a comprehensive estimate of the overall incidence of contingent employment in Ireland.

Furthermore, the research is not able to isolate aspects of the 'gig economy' in the data. Despite the popular use of the term, it is very difficult to find a definition for exactly what is meant by the gig economy. *Collins English Dictionary* defines it as 'an economy in which there are few permanent employees and most jobs are assigned to temporary or freelance workers'. It has also been defined as 'a labour market characterized by the prevalence of short-term contracts or freelance work as opposed to permanent jobs'.[4] Thus, it is clear that the term 'gig economy' generally describes employment within the labour market that is non-permanent in nature, which aligns with the concept of contingent employment adopted in the current study. Nevertheless, it is also clear that media and policy debate on the gig economy generally focuses on the activities of larger organisations that rely heavily on non-permanent workers, such as Uber and Deliveroo. In the absence of detailed firm-level data or case-study information it is not possible for us to assess the extent to which the patterns identified within the current study of contingent employment are representative of such employers.

In this section we will rely on the QNHS to provide a detailed analysis of contingent employment in Ireland over time and the transition behaviour of contingent workers. The EU SILC data will allow us to compare the incidence of contingent employment and the characteristics of contingent workers with the situation in other European countries.

The QNHS provides quarterly estimates of employment, unemployment, etc.[5] The survey is continuous and targets all private households. Households are asked to take part in the survey for five consecutive quarters. In each quarter, one-fifth of the households surveyed are replaced, therefore the QNHS sample involves an overlap of 80 per cent between consecutive quarters and 20 per cent between the same quarters in consecutive years. Using the QNHS microdata we define

[4] http://www.bbc.com/news/business-38930048

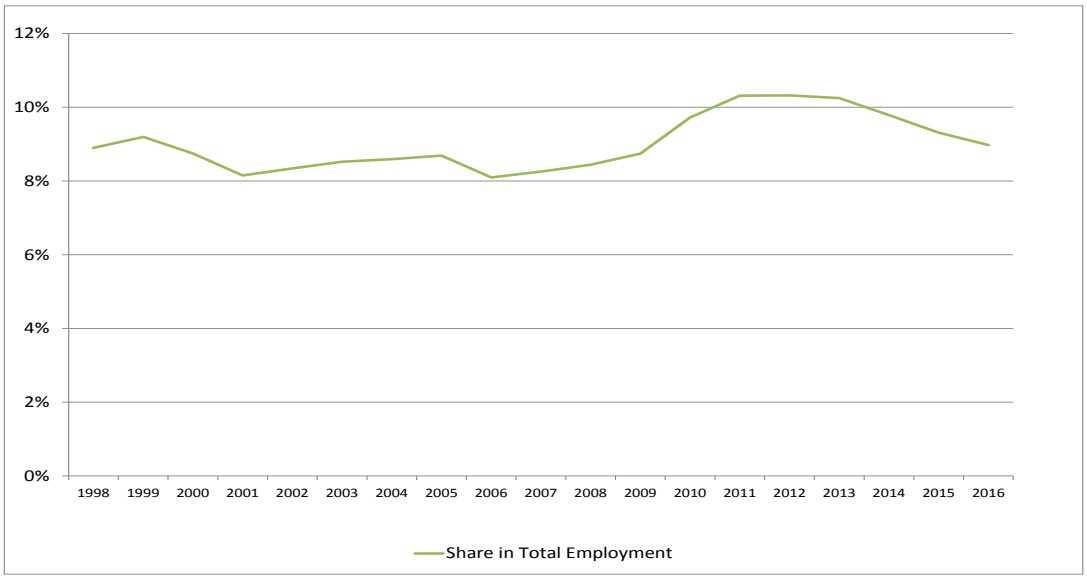
[5] Sections 3, 5.4 and 6 of this report uses research microdata from the CSO's Quarterly National Household Survey (QNHS) which was the official source of labour market data for Ireland for the period Q1 1998 up to Q2 2017. Effective from Q3 2017, the CSO replaced the QNHS with a new Labour Force Survey (LFS). This new survey includes changes to survey methodology along with incorporation of the new population estimates from the 2016 Census of Population. As a result, all labour market data dating back to Q1 1998 has been revised. The results in these sections have not been adjusted to the levels of the new LFS and therefore the levels of the overall aggregates may differ from current LFS data. However, the trends in the series remain the same before and after the revisions.

contingent employment as the sum of temporary employment and freelance employment. Freelancers are defined as self-employed without employees in NACE sectors J (information and communication), K (financial and insurance activities), N (administrative and support service activities, P (education), R (arts, entertainment and recreation) and S (other). Temporary workers are those with a temporary job/work contract of limited duration. This broad definition of temporary workers includes students, although students are excluded from the more detailed analysis in later sections of the report.

3.1 THE INCIDENCE OF CONTINGENT EMPLOYMENT IN IRELAND

Adopting the definition of contingent workers discussed above, Figure 3.1 shows that the incidence of contingent employment in Ireland ranged between 8 and 9 per cent of total employment between 1998 and 2010 before increasing to over 10 per cent between 2011 and 2013.[6] The incidence of contingent employment fell back towards its pre-recession level by 2016. Therefore, the evidence does not support the view that the incidence of contingent employment has been increasing steadily over time in Ireland.

FIGURE 3.1 INCIDENCE OF CONTINGENT EMPLOYMENT IN IRELAND

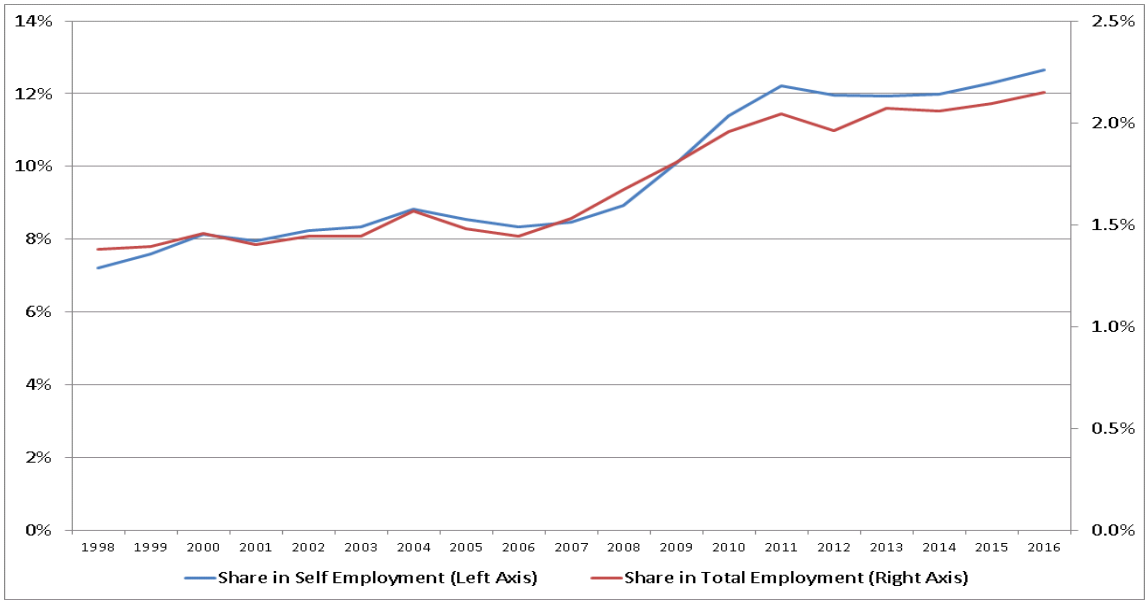


Note: Contingent employment is defined as the sum of temporary employment and freelance employment. Freelancers are defined as self-employed without employees in NACE sectors J (information and communication), K (financial and insurance activities), N (administrative and support service activities), P (education), R (arts, entertainment and recreation) and S (other). Temporary workers are those with a temporary job/work contract of limited duration. This broad definition of temporary workers includes students. Total employment is measured as the sum of all employees plus the self-employed.

[6] A number of pieces of legislation are in place to protect non-full-time workers from discrimination. The Protection of Employees (Part-Time Work) Act 2001 specifies that part-time workers cannot be treated differently to full-time workers in respect of any condition of employment. The Protection of Employees (Fixed-Term Work) Act 2003 prohibits discrimination against fixed-term workers. This Act also specifies that if an employer hires an employee on two continuous fixed-term contracts, it cannot be for more than four consecutive years. Finally, the Protection of Employees (Temporary Agency Work) Act 2012 states that temporary agency workers have the right to equal treatment in basic working and employment conditions.

Figures 3.2 and 3.3 break contingent employment down into its separate components of freelancers and temporary workers. Figure 3.2 demonstrates that freelance employment has been increasing steadily in Ireland since 1998; however, freelancers remain a relatively minor component of the Irish labour market, accounting for just over 2% of total employment (employment + self-employment) and 12% of self-employment in 2016. Temporary employees account for 80% of contingent workers, as defined above, in Ireland. Temporary employment has not shown a trend increase over recent years, with the exception of the post-recession period of 2011 to 2013, when temporary employment increased to just over 8% of total employment (or just under 10% of all employees); the rate returned to its period average of 7% in 2016 (or just over 8% of employees).

FIGURE 3.2 INCIDENCE OF FREELANCERS IN IRELAND



Note: Freelancers are defined in the note to Figure 3.1.

FIGURE 3.3 INCIDENCE OF TEMPORARY WORKERS IN IRELAND

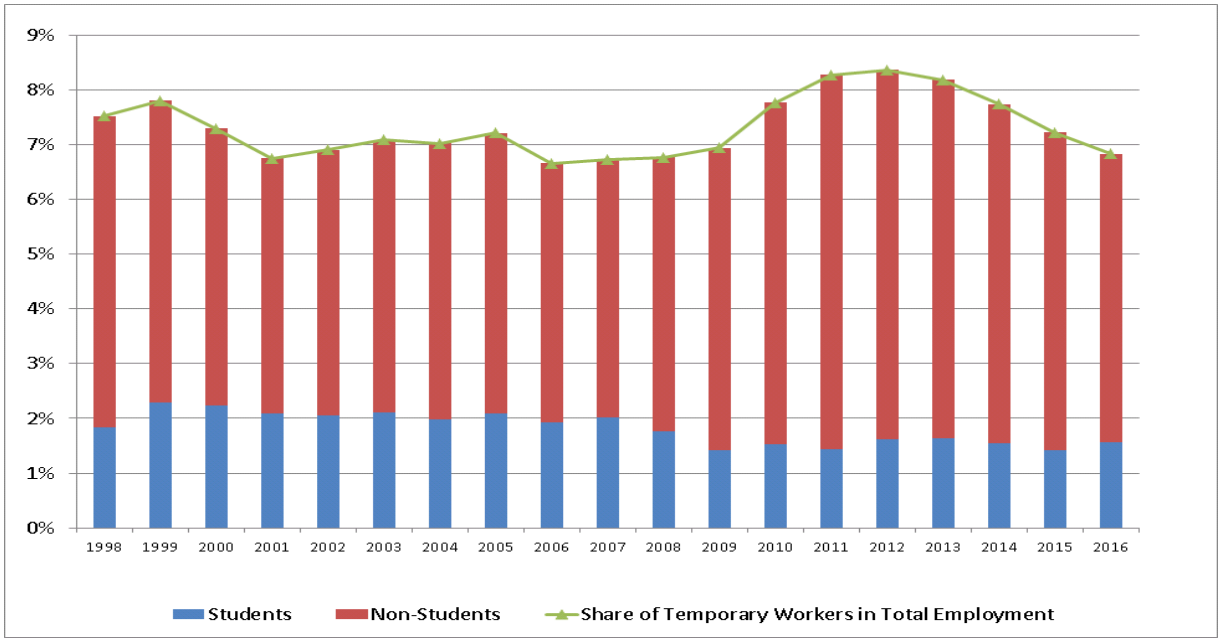
Note: Temporary workers are defined in the note to Figure 3.1.

Given that temporary employment represents the bulk of contingent employment in Ireland, we now assess the various components of temporary employment and the motivations of workers for accepting such contractual arrangements. We begin by looking at the share of temporary workers who are students, on the basis that such employment can be considered largely transitory, lasting only for the duration of an individual's particular study programme. Figure 3.4 demonstrates that students typically account for around 25% of temporary employees, with the share remaining relatively constant over time, despite some fluctuations in the total rate of temporary employment throughout the business cycle. Part-time workers accounted for, on average, 50% of employees on temporary contracts over the 1998 to 2016 period; however, the share of part-time employees increased somewhat over the period, from 48% in 1998 to 58% in 2016 (Figure 3.5).

The QNHS also examines types of temporary work including project workers, i.e. workers with a temporary contract that lasted only until a particular task or tasks were completed (Figure 3.6). The proportion of temporary employees who were project workers remained constant at 6% from 2001 to 2008; it then more than doubled to 14% in 2014, before beginning to fall back to just above 10% in 2016. Finally, the QNHS explores some of the reasons for temporary employment in Ireland including those who do not want a permanent job. The proportion of temporary workers not seeking a permanent contract fell steadily from 33% in 1998 to just over 13% in 2011, before beginning to rise again to 19.5% in 2016 (Figure 3.7).[7] The data suggest that, for the vast majority of workers, temporary employment status is not a choice or a preferred option, given that only 19.5% in 2016 were not seeking a permanent contract.

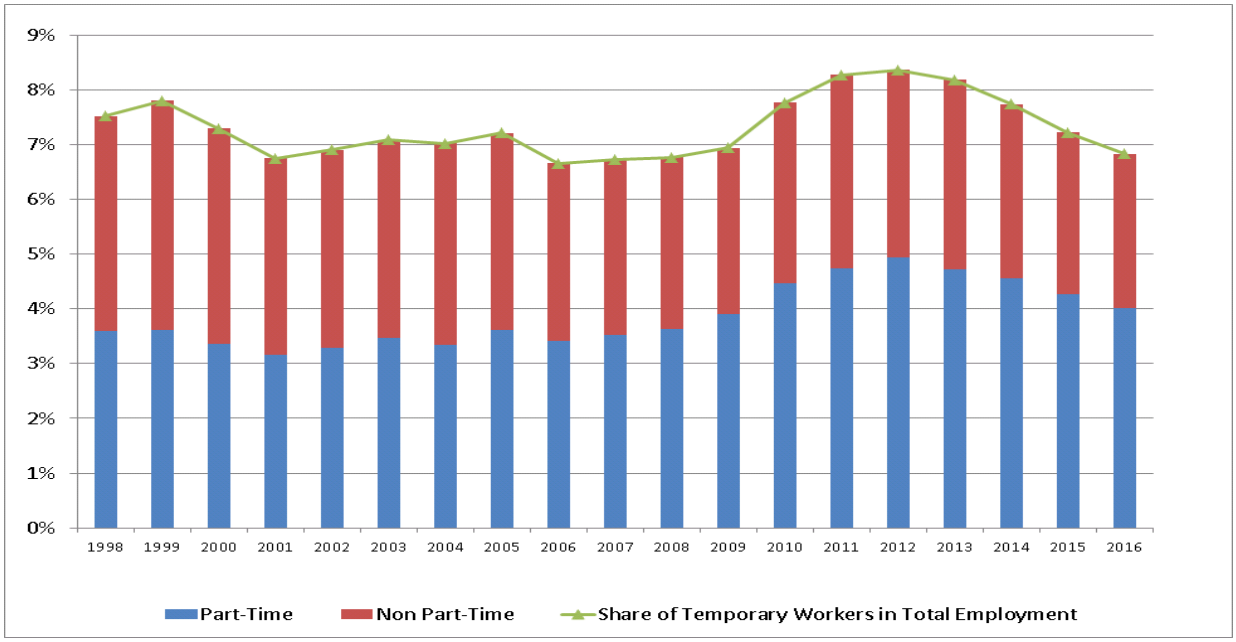
[7] In terms of other reasons for having a temporary job, in 2016, 50.4% of temporary workers reported that they could not find a permanent job, a further 8.4% had a contract covering a period of training or apprenticeship, 2.8% were on a probationary period and the remaining 19% of temporary workers did not provide a response to this question. These data refer to all temporary workers.

FIGURE 3.4 TEMPORARY EMPLOYMENT: STUDENTS AND NON-STUDENTS



Note: Temporary workers are defined in the note to Figure 3.1. Students are defined as those whose main labour status is 'student or pupil'.

FIGURE 3.5 TEMPORARY EMPLOYMENT: PART-TIME AND NON-PART-TIME

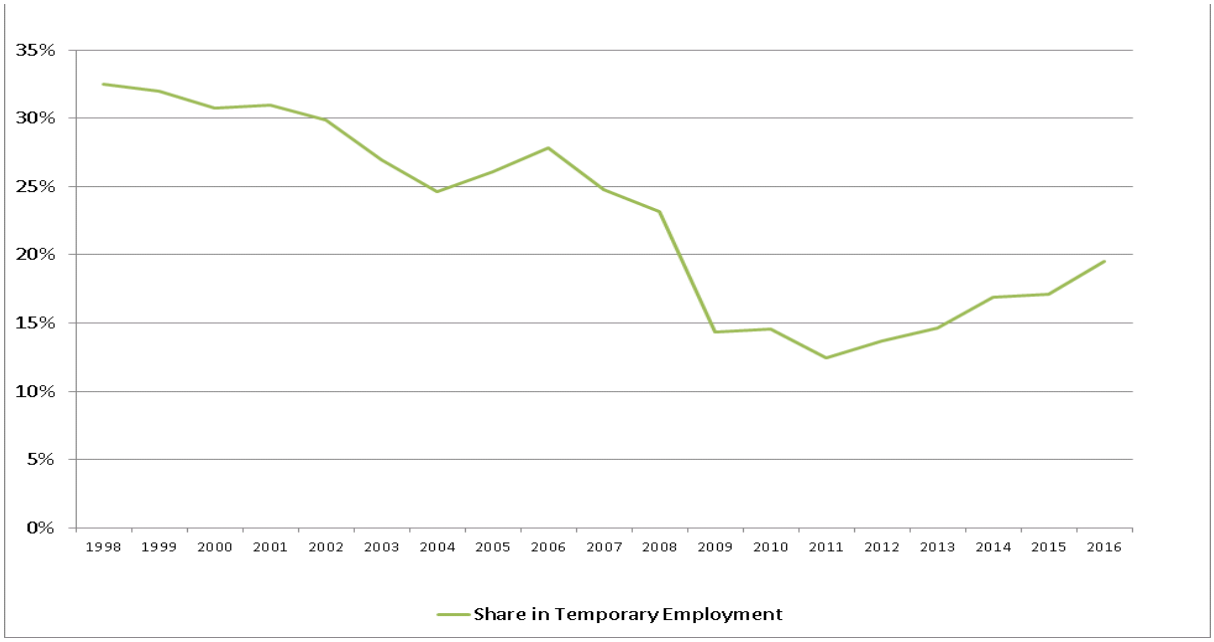


Note: Temporary workers are defined in the note to Figure 3.1. Students are defined as those whose main labour status is 'student or pupil'.

FIGURE 3.6 PROJECT WORKERS

Note: Non-permanent workers who seek work on a project basis, i.e. workers with a temporary contract that lasts only until a particular task/tasks are completed.
Source: QNHS Micro Data.

FIGURE 3.7 REASONS FOR TEMPORARY EMPLOYMENT: VOLUNTARY TEMPORARY EMPLOYMENT



Note: Workers with a temporary job who did not want a permanent job. From QNHS Codebook: Users should note level change in Q2 2012 due to change in question. This level change has a big effect on the calculation of 'involuntary' temporary employment (i.e. workers with a temporary job who could not find a permanent job).
Source: QNHS Micro Data.

3.2 THE CHARACTERISTICS OF WORKERS IN CONTINGENT EMPLOYMENT

We next use the QNHS to examine the labour market characteristics of contingent workers in Ireland during 2016. Relative to the distribution of total employment, contingent workers are much more heavily represented in the 15 to 24 age category; however, it is likely that the inclusion of students in the data explains

some of these distributional differences. When the data are broken out by contingent worker type, and students are removed from the sample, some contrasting patterns emerge with respect to temporary employees and freelancers. Relative to the distribution of total employment, freelance workers are more heavily concentrated in the 45 to 54 age category, while workers on temporary contracts (non-student) are much more likely to be aged 25 to 34 (Table 3.1).

TABLE 3.1 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: AGE

Age (years)	All employment (%)	All contingent employment (%)	Freelancers (%)	Non-student temporary employment (%)
15–19	2	10	*	4
20–24	7	19	3	17
25–34	21	21	14	27
35–44	28	18	26	20
45–54	24	20	32	21
55–64	15	10	18	10
64–74	3	2	6	2

Note: Contingent employment is defined as the sum of freelancers and temporary employment (including students). Where there are fewer than 30 persons in a cell, estimates are not considered reliable and are not given (denoted by * in table).
Source: QNHS Micro Data.

With respect to gender, freelancers are more likely to be male and temporary workers are marginally more likely to be female (Table 3.2).[8] Non-nationals were not found to be more heavily concentrated than average within either form of contingent employment (Table 3.3).

TABLE 3.2 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: GENDER

Gender	All employment (%)	All contingent employment (%)	Freelancers (%)	Non-student temporary employment (%)
Male	54	51	60	48
Female	46	49	40	52

Source: QNHS Micro Data.

[8] The multivariate analysis in Section 5.1 formally models the determinants of temporary employment using EU-SILC data for Ireland. The analysis reveals that once factors such as full-time/part-time status and sector of work are controlled for, males are more likely to be in temporary employment. A similar model of temporary employment for Ireland using the QNHS data (in Appendix, Table A1) also reveals that when these variables are controlled for, males are more likely to be in temporary employment.

TABLE 3.3 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: NATIONALITY

Nationality	All employment (%)	All contingent employment (%)	Freelancers (%)	Non-student temporary employment (%)
Irish national	88	88	87	86
Non-national	12	12	13	14

Source: QNHS Micro Data.

In terms of education, attainment levels among temporary workers align with the average patterns observed for the workforce; however, freelancers are more likely to be educated to tertiary level compared to the workforce average (Table 3.4). The data also revealed that neither temporary workers nor freelancers are more likely to have a second job than average (Table 3.5). Temporary workers are much more likely to be employed part-time compared to the workforce average, while the opposite is true for freelancers (Table 3.6).

TABLE 3.4 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: EDUCATION LEVEL

Education level	All employment (%)	All contingent employment (%)	Freelancers (%)	Non-student temporary employment (%)
Low (ISCED 2011 Levels 0–2) (up to lower secondary)	16	17	9	17
Medium (ISCED 2011 Levels 3–4) (upper secondary to post-secondary non-tertiary)	38	39	28	37
High (ISCED 2011 Levels 5–8) (tertiary)	46	44	63	46

Note: In the QNHS microdata, education is categorised on an ISCED 2011 basis from 2014 and on an ISCED 1997 basis before that. In order to ensure comparability over time, the data are typically presented in a three-way split as in the table above.
Source: QNHS Micro Data.

TABLE 3.5 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: WORKER HAS A SECOND JOB

Second job?	All employment (%)	All contingent employment (%)	Freelancers (%)	Non-student temporary employment (%)
Yes	2	2	[3]	2
No	98	98	97	98

Note: Where there are 30–49 persons in a cell, estimates are considered to have a wider margin of error and should be treated with caution. These estimates are given in square brackets [].
Source: QNHS Micro Data.

TABLE 3.6 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: FULL-TIME/PART-TIME

Full-/part-time distinction	All employment (%)	All contingent employment (%)	Freelancers (%)	Non-student temporary employment (%)
Full-time	77	48	70	50
Part-time	23	52	30	50

Source: QNHS Micro Data.

With regard to sector of employment, the evidence suggests that non-student temporary workers are distributed throughout the economy; nevertheless, they are overrepresented in Education and under-represented in Agriculture, Manufacturing and Wholesale and Retail (Table 3.7). In terms of firm-size, we found no strong tendency for temporary employment to be heavily concentrated within smaller firms and, as was the case with sector, temporary workers were found to be distributed across organisations of all sizes (Table 3.9). Finally, with regard to occupation, 45% of freelancers were in Professional occupations, 14% were Technicians or Associate Professionals, with 15% working in Sales and Service occupations (Table 3.8).

Taken as a whole, the QNHS data suggest that freelancers tend to be older, well-educated individuals who offer their services predominantly within professional and skilled labour markets. Temporary workers were found within all occupations, however, relative to the overall workforce, they were under-represented among Managers and Technicians and Associate Professionals and over-represented within Sales and Service occupations. Interestingly, in line with the labour market average, 23% of temporary workers were employed in Professional occupations. Therefore, in general, the data would suggest that temporary employment is not a predominantly low skilled occupation, with temporary workers distributed across all sectors, occupations and organisational sizes (Table 3.9).

TABLE 3.7 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: SECTOR

Sector	All employment	All contingent employment	Non-student temporary employment
Agriculture, forestry and fishing (A)	6	1	2
Manufacturing (C)	12	7	10
Construction (F)	7	5	8
Wholesale and retail trade; repair of motor vehicles and motorcycle (G)	14	12	10
Transportation and storage (H)	5	2	3
Accommodation and food service activities (I)	7	10	7
Information and communication (J)	4	7	3
Financial and insurance activities (K)	4	3	3
Professional, scientific and technical activities (M)	6	3	5
Administrative and support service activities (N)	3	7	5
Public administration and defence; compulsory social security (O)	5	3	4
Education (P)	8	13	16
Human health and social work activities (Q)	13	9	14
Arts, entertainment and recreation (R)	2	10	4
Other service activities (S)	2	6	2
Rest	2	2	2

Source: QNHS Micro Data.

TABLE 3.8 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: OCCUPATION

Occupation	All employment (%)	All contingent employment (%)	Freelancers (%)	Non-student temporary employment (%)
Managers	8	4	9	2
Professionals	21	25	45	23
Technicians and associated professionals	11	9	14	8
Clerical support workers	10	9	*	11
Services and sales workers	20	29	17	25
Skilled agricultural, forestry and fishery workers	5	3	5	2
Craft and related trades workers	10	5	[2]	8
Plant and machine operators and assemblers	6	4	*	6
Elementary occupations	8	12	6	13

Note: Where there are fewer than 30 persons in a cell, estimates are not considered reliable and are not given (denoted by * in table). Where there are 30–49 persons in a cell, estimates are considered to have a wider margin of error and should be treated with caution. These estimates are given in square brackets [].

Source: QNHS Micro Data.

TABLE 3.9 CHARACTERISTICS OF WORKERS IN DIFFERENT TYPES OF EMPLOYMENT, 2016: FIRM SIZE

Number of persons working at the local unit	All employment (%)	All contingent employment (%)	Non-student temporary employment (%)
1–10	29	33	33
11–19	11	13	12
20–49	16	17	16
50–99	11	11	9
100–249	11	8	8
250–500	8	5	6
500+	15	13	14

Source: QNHS Micro Data.

SECTION 4

International comparison

We next use the EU SILC data to benchmark contingent employment in Ireland, defined in terms of temporary workers and freelancers, against the situation in other EU countries over time. The EU Labour Force Survey (LFS), of which the QNHS forms the Irish component, has a larger sample size but the EU version that allows for comparison across EU countries does not contain a variable that allows us to identify freelancers, i.e. those who are self-employed with no employees. For this reason the EU SILC data are used for the international comparison. The identification of temporary workers in the EU SILC is straightforward and based on a question regarding the type of contract an employee holds.[9] The definition of employment is based on the person's own perception of their *main* activity at present.[10]

As described earlier, freelancers are solo entrepreneurs active in six sectors.[11] While solo entrepreneurs can be identified, the EU SILC data aggregate some smaller sectors together, so that some of the six 'freelance' sectors are included with 'non-freelance' sectors. We have therefore had to adopt an approach[12] to isolate freelancers, which means that our freelance rate shown in this section is slightly underestimated but we capture the majority of freelance workers.[13] Given that we accurately capture temporary employment and the overall rate of freelance work is low, we capture the vast majority of contingent employment using EU SILC.

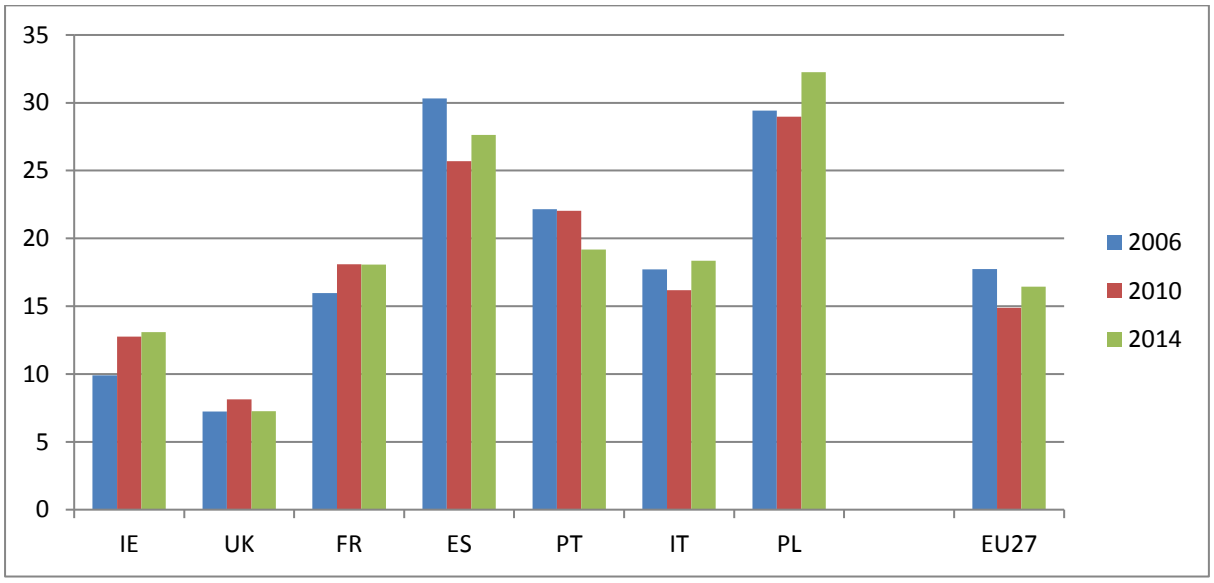
The most recent data available at the time of the research related to 2014, during which total contingent employment in Ireland was approximately 13% of total employment based on EU SILC, with the corresponding figures for temporary and freelance employment standing at 10.5% and 2.5% respectively. The comparable estimates for total contingent employment, temporary employment and freelancers in 2014 based on the QNHS were approximately 10%, 8% and 2% respectively; therefore, EU SILC generates slightly higher estimates of both contingent components compared to the QNHS. It is not unusual for different

[9] The potential answers to this question are 'a permanent job/work contract of unlimited duration' and 'a temporary job/work contract of limited duration'.
[10] Therefore students who are also working will more than likely be excluded from employment if they deem that their main current status is being in education.
[11] J (information and communication), K (financial and insurance activities), N (administrative and support service activities, P (education), R (arts, entertainment and recreation) and S (other).
[12] Specifically, in the case where one of the six sectors we wished to isolate was included in an aggregate sector we used QNHS data to examine how much of the total employment in an aggregate sector was in the 'freelance' sector of interest. In order to define a freelancer we then defined individuals in an aggregated sector to be freelance if the freelance sector made up more than 75% of the total aggregated sector.
[13] Compared to the QNHS results we capture 68% of freelancers in the 2006 results and 86% of freelancers in the 2010/2014 results.

datasets to yield slightly divergent rates of various phenomenon given differences in sampling methodologies and classification systems. Nevertheless, the two datasets are relatively consistent in terms of both the level of contingent employment and its trend over time, giving us confidence that the EU SILC data will give a true picture of both temporary and freelance employment in Ireland within a European comparative framework.

It is clear from Figure 4.1 that the rate of contingent employment increased from its 2006 level in the years following the recession. The trend apparent in the EU SILC data is consistent with that of the QNHS, which also indicated that the rate had begun to fall back towards pre-recession levels by 2016. More importantly, Figure 4.1 clearly shows that despite some increases in contingent employment following the recession, Ireland remained almost 4 percentage points lower than the EU average in 2014. The Irish rate of contingent employment in 2014 remains low compared to countries hit strongly by the crisis such as Spain, Portugal and Italy. In Poland nearly one-third of those at work are in contingent employment. However, the rate was 80% higher than the rate in the UK.

FIGURE 4.1 CONTINGENT EMPLOYMENT AS A PROPORTION OF ALL EMPLOYMENT (%)

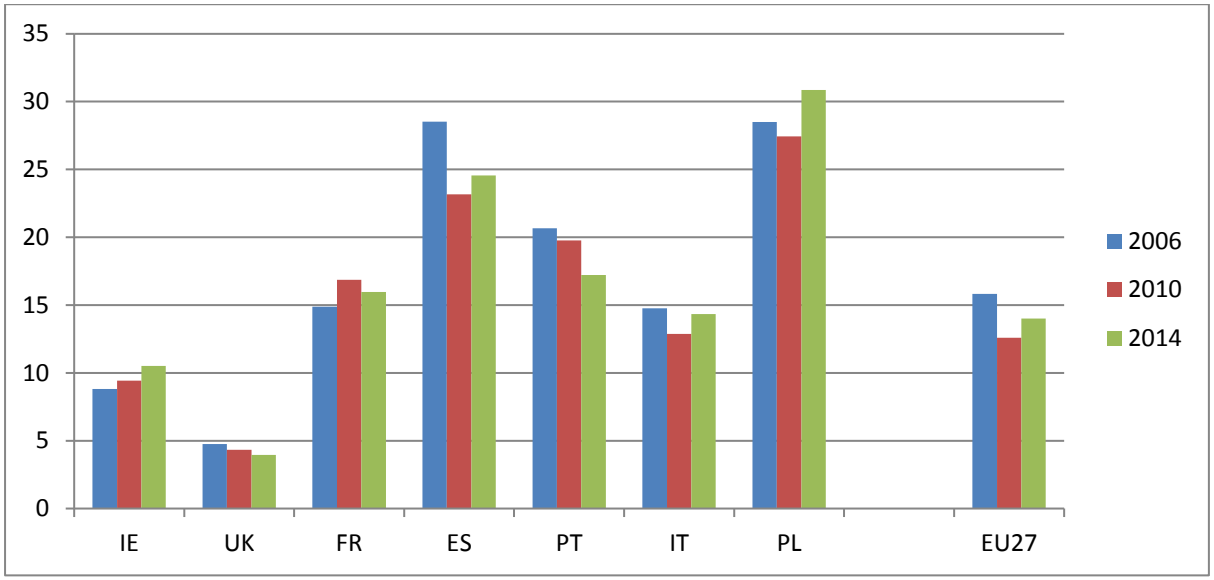


Note: 'Employment' covers employees and the self-employed and is based on an individual's self-defined economic status. Contingent employment consists of temporary and freelance employment. Results are weighted using euro weight.
Source: EU SILC data.

With respect to the individual components of contingent employment, despite increases post-recession, temporary employment in Ireland was still one quarter lower than the EU average in 2014. The Irish temporary employment rate in 2014 stood at just 40 per cent that of Spain and less than a third of the rate of Poland.

In contrast, the rate of temporary employment in Ireland is approximately one-third higher than the rate reported for the UK in 2014 (Figure 4.2).[14]

FIGURE 4.2 TEMPORARY EMPLOYMENT AS A PROPORTION OF ALL EMPLOYMENT (%)

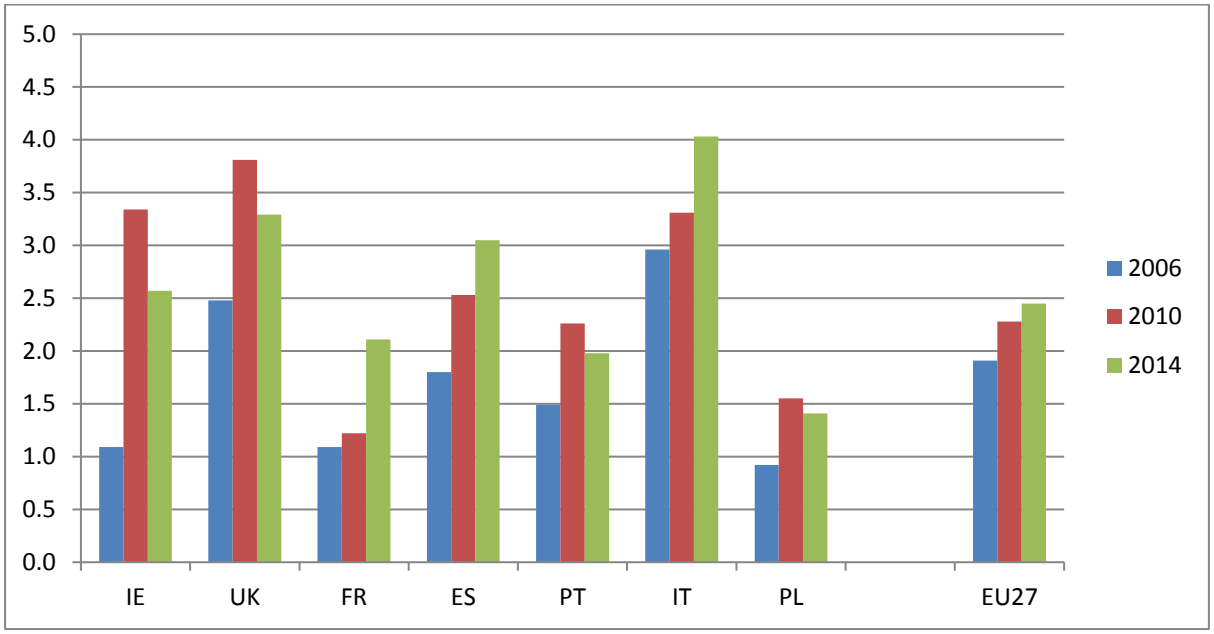


Note: 'Employment' covers employees and the self-employed and is based on an individual's self-defined economic status. Temporary employment covers those who report having a temporary job or work contract of limited duration. Results are weighted using euro weight.
Source: EU SILC data.

Finally, Figure 4.3 shows that the rate of freelance employment in Ireland was lower than the EU average in 2006 but increased substantially during the recession in 2010, when it exceeded the EU average but remained lower than the UK, and decreased subsequently so that now it is roughly equal to the EU average rate of freelance employment at 2.5 per cent.

[14] A similar cross-country pattern emerges using the EU LFS data. The EU LFS reveals that, in 2016, 11.2% of all employees were temporary employees in the EU-28, while the comparable rates were 6.2% for Ireland and 4.5% for the UK (source: Eurostat, available at http://ec.europa.eu/eurostat/web/products-datasets/-/tesem110). The lower rate of temporary employment in the UK is consistent with the finding by NIESR (2017) that the UK has one of the lowest rates of temporary employment in the EU despite having the third highest absolute growth rate in temporary employment since the financial crisis.

FIGURE 4.3 FREELANCE EMPLOYMENT AS A PROPORTION OF ALL EMPLOYMENT (%)



Note: 'Employment' covers employees and the self-employed and is based on an individual's self-defined economic status. Freelancers are those who report being self-employed with no employees and who work in the sectors. As sectoral information at this detailed (two-digit) level is not available in SILC, sectors in which more than 75% are freelance in the QNHS data are included as freelance sectors. This definition therefore underestimates freelancers.

Source: EU SILC data.

SECTION 5

Multivariate analysis

In the next section we use the EU SILC data to model the characteristics of temporary employees in Ireland; we focus on individuals on temporary contracts as they represent the overwhelming majority of contingent workers in Ireland.[15] We opt for the EU SILC data as this allows us to compare, and contrast, the key attributes of temporary employees in Ireland with their European counterparts and to assess how the relative profiles have evolved over time. Furthermore, the EU SILC data enables us to control for a wider range of factors, such as household composition and labour market experience, which are not available in the QNHS data. Nevertheless, to ensure that we are getting a consistent picture from the EU SILC data, we will also compare the key findings from the emerging models with a more basic estimation based on the QNHS data. In this section, we also make use of the longitudinal properties of the QNHS, to assess the degree to which temporary employment represents a stepping stone to a permanent contract relative to other labour market states, such as self-employment and unemployment.

5.1 DETERMINANTS OF TEMPORARY EMPLOYMENT IN IRELAND

The key determining characteristics of temporary employees, relative to those on permanent contracts, are shown in Table 5.1. In 2014, males were 4.5 percentage points more likely to be temporary employees than females. With respect to education, compared to employees with primary education or below, those educated to upper secondary level were less likely to be on temporary contracts, while there was no difference for individuals with tertiary education once occupation was controlled for. This may reflect the significant proportions of employees belonging to professional occupations in Ireland who are on temporary contracts. In keeping with the earlier QNHS descriptive data, part-time workers were 8.9 percentage points more likely to be on temporary contracts relative to their full-time counterparts. Temporary contracts were more common among workers with limited work experience, specifically, relative to employees who had been active in the labour market for over 10 years. Employees with no or less than 4 years' experience were 29 and 17 percentage points respectively more likely to be on temporary contracts relative to persons active in the labour market for over 10 years. With respect to sector of employment, the model indicates that, compared to the reference category of Wholesale and Retail, the share of temporary workers was higher in a variety of sectors including Construction, Finance and Insurance, and Education. Finally, consistent with the QNHS

[15] Sample size issues make it very difficult to estimate a model for freelancers based on the EU SILC data.

descriptive data, the rate of temporary employment was not found to vary with firm size.[16]

5.2 DETERMINANTS OF TEMPORARY EMPLOYMENT – COMPARISON WITH THE EU 27

Comparing the results from the Irish model with that based on data for the EU 27 in 2014, a small number of differences emerge.[17] Specifically, temporary employment within the EU 27 is more male dominated. In terms of sector, temporary contracts are more likely to be used in the Construction sector in the EU 27. While those working part-time are more likely to be in temporary employment both in Ireland and across the EU 27, the effect is larger in Ireland. Taken as a whole, the characteristics of temporary contracts are more consistent with those of low- or minimum-waged jobs relative to what is observed for the Irish case (Table 5.1). This conclusion is supported by the results from a wage equation model which demonstrated that, after controlling for a range of other factors, temporary workers in Ireland experienced a pay penalty of approximately 21 per cent in 2014 relative to their permanent counterparts. While this pay penalty was substantial, it was around one-third less than the comparable EU 27 estimate for the same period (Table 5.3).

Looking at the time dimension and comparing both the Irish and EU 27 models with comparable estimates for 2006 (Table 5.2): with regard to the Irish case, the greater likelihood of temporary employment among males was not apparent in the earlier period, and education has begun to play a role in reducing the likelihood of being employed on such contracts. With respect to the EU 27 model, the estimates look relatively stable; however, they do suggest that temporary employees were more likely to work part-time in the earlier period.

[16] We can compare the results of the EU SILC 2014 model with those of a more basic model estimated on QNHS data for the same year. The results from the two models show a consistent pattern where the same variables are available for both; for instance, the QNHS model also indicates a lower likelihood of temporary employment among females, no significant reduction in the risk for workers with third-level education or in smaller firms, a strong positive impact for part-time status and consistent sectoral impacts (see Appendix).

[17] Differences mentioned here are only those that are statistically significant between the EU 27 and Irish models.

TABLE 5.1 TEMPORARY EMPLOYMENT PROBIT, MARGINAL EFFECTS – EU 27 AND IRELAND, 2014

	Ireland, 2014		EU 27, 2014	
	Marginal Effect	**Standard Error**	**Marginal Effect**	**Standard Error**
Female	−0.0425**	−0.0129	−0.00976***	−0.00243
Age	0.000643	−0.00371	−0.00202**	−0.00078
Age squared	−6.5E−06	−4E−05	−0.000000615	−8.6E−06
In bad health	0.00597	−0.0188	0.00978***	−0.00277
Part-time	0.0849***	−0.0144	0.0429***	−0.00314
Primary earner	−0.0151	−0.0122	−0.0420***	−0.00247
Logged other income	0.0136	0.00629	0.0136	0.00108
Child age 0–5	−0.0225*	−0.0114	−0.00167	−0.00281
Child aged 6–10	−0.00999	−0.0101	0.00325	−0.00258
Child aged 11–15	0.00399	−0.0101	0.00122	−0.00271
Ref.: Primary or lower				
Lower secondary	−0.0356*	−0.015	−0.0254***	−0.00454
Upper secondary	−0.0436**	−0.0158	−0.0487***	−0.0047
Third level	−0.0441	−0.0242	−0.0567***	−0.00482
Ref: Single				
Married/cohabiting	−0.0152	−0.0192	−0.0263***	−0.00375
Widowed	−0.0430*	−0.0201	−0.0298***	−0.00741
Separated/divorced	0.0223	−0.0381	0.000431	−0.00576
Ref: Native-born				
Other EU	0.0115	−0.0152	−0.0288***	−0.00469
Non-EU	0.0217	−0.0323	0.0280***	−0.00497
Ref: Work experience 10 years +				
0 years	0.277**	−0.091	0.344***	−0.0166
1–4 years	0.161**	−0.051	0.199***	−0.00791
5–9 years	0.0326	−0.0224	0.0663***	−0.00468
Ref: 2 adults with children				
1 adult, no child	0.0567	−0.0545	0.133***	−0.0124
1 adult, child	−0.005	−0.0287	0.0215*	−0.00964
2 adults, no child	−0.0179	−0.0163	0.00386	−0.00416
3+ adults, no child	−0.0165	−0.0171	−0.00892*	−0.00403
3+ adults, child	−0.0125	−0.0156	0.0124**	−0.00388
Ref: Wholesale/retail (G)				
Agriculture, forestry and fishing (A)	−0.0254	−0.0395	0.0814***	−0.0103
Mining and quarrying, manufacturing, electricity, gas, steam and air conditioning supply, water supply (B–E)	0.0235	−0.03	0.0253***	−0.00445
Construction (F)	0.220**	−0.08	0.0544***	−0.00673
Transportation and storage (H)	0.0084	−0.0437	−0.00376	−0.00581
Accommodation and food service activities (I)	−0.00398	−0.0262	0.0549***	−0.00652

	Ireland, 2014		EU 27, 2014	
Information and communication (J)	0.0803	−0.0544	0.0123	−0.00809
Financial and insurance activities (K)	0.169**	−0.0631	−0.002	−0.0074
Real estate activities, professional, scientific and technical activities, administrative and support service activities (L–N)	0.124**	−0.045	0.0387***	−0.0055
Public administration and defence, compulsory social security (O)	0.0651	−0.041	0.0585***	−0.00585
Education (P)	0.206***	−0.0577	0.0864***	−0.0064
Human health and social work activities (Q)	0.131**	−0.0437	0.0417***	−0.00519
Arts, entertainment and recreation, other service activities, activities of household as employer, activities of extraterritorial organisations and bodies (R–U)	0.140*	−0.0561	0.0766***	−0.00722
Ref: Elementary occupations				
Armed forces	n.a.		−0.0876***	−0.00736
Managers	−0.0432**	−0.0162	−0.0893***	−0.00279
Professionals	−0.00963	−0.0182	−0.0758***	−0.003
Technicians & associated professionals	0.0102	−0.0233	−0.0814***	−0.0026
Clerical support workers	−0.0121	−0.0177	−0.0683***	−0.00277
Services & sales workers	−0.0266	−0.0161	−0.0477***	−0.00301
Skilled agricultural, forestry & fishery	−0.0224	−0.0159	−0.0379***	−0.00643
Craft & related trades	−0.00426	−0.0217	−0.0415***	−0.00343
Plant & machine operators/assemblers	0.00292	−0.0258	−0.0410***	−0.00361
Ref: Firm size 50+ employees				
1–10 employees	0.0154	−0.0136	0.0135***	−0.00273
11–19 employees	0.0199	−0.0196	0.00539	−0.00327
20–49 employees	0.008	−0.0148	−0.00669*	−0.00292
N	2455		101337	
Pseudo-R^2	0.175		0.134	

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. The industry categories are based on NACE Rev. 2.
Source: EU SILC 2014 data.

TABLE 5.2 TEMPORARY EMPLOYMENT PROBIT, MARGINAL EFFECTS – EU 27 AND IRELAND, 2006

	Ireland, 2006		EU 27, 2006	
	Marginal effect	**Standard error**	**Marginal effect**	**Standard error**
Female	−0.00065	−0.00961	0.0103***	−0.00248
Age	−0.0117***	−0.00212	−0.0204***	−0.000647
Age squared	0.000113***	−0.0000243	0.000186***	−0.00000778
In bad health	0.0198	−0.0161	0.00946***	−0.0026
Part-time	0.0726***	−0.0126	0.0704***	−0.00344
Primary earner	−0.00176	−0.0104	−0.0393***	−0.00246
Logged other income	0.0121*	−0.00614	−0.0134***	−0.00103
Child age 0–5	−0.0214	−0.0122	−0.00616*	−0.00289
Child aged 6–10	0.000197	−0.0105	0.00536*	−0.00267
Child aged 11–15	−0.00389	−0.00986	0.00744**	−0.00258
Ref: Primary or lower				
Lower secondary	−0.0141	−0.0132	−0.0310***	−0.00385
Upper secondary	−0.0167	−0.0136	−0.0492***	−0.00401
Third level	−0.00315	−0.0153	−0.0451***	−0.00416
Ref: Single				
Married/cohabiting	−0.0230	−0.0152	−0.0464***	−0.00392
Widowed	−0.0211	−0.0184	−0.0388***	−0.00696
Separated/divorced	0.0661	−0.0367	0.0661	−0.00565
Ref: native born				
Other EU	0.0304	−0.0178	−0.0234***	−0.00565
Non-EU	0.0646	−0.0382	0.0430***	−0.0051
Ref: 2 adults with children				
1 adult, no child	0.146*	−0.0639	0.0486***	−0.00849
1 adult, child	0.0484	−0.0374	0.0268**	−0.00957
2 adults, no child	0.0187	−0.0188	0.0173***	−0.0044
3+ adults, no child	0.0137	−0.0169	0.0210***	−0.00424
3+adults, child	0.0190	−0.0178	0.0303***	−0.00397
Ref: Wholesale/retail (G)				
Agriculture, hunting and forestry, fishing (A, B)	−0.0399*	−0.0168	0.102***	−0.0102
Mining and quarrying, manufacturing, electricity, gas and water supply (C–E)	0.00595	−0.0193	0.0138**	−0.00421
Construction (F)	−0.00508	−0.0192	0.0655***	−0.00628
Hotels and restaurants (H)	−0.00069	−0.018	0.0282***	−0.00637
Transport, storage and communication (I)	0.0596	−0.0347	0.000387	−0.00564
Financial intermediation (J)	−0.0329*	−0.0155	−0.0306***	−0.00648
Real estate, renting and business activities (K)	0.0374	−0.0231	0.0150**	−0.00538
Public administration and defence, compulsory social security (L)	0.0843**	−0.0299	0.0376***	−0.00557

	Ireland, 2006		EU 27, 2006	
Education (M)	0.0953**	−0.0323	0.0588***	−0.00615
Health and social work (N)	0.0777**	−0.0255	0.0261***	−0.00515
Other community, social and personal service activities; activities of households; private households with employed persons (O, P)	0.0382	−0.0253	0.0562***	−0.00599
Ref: Elementary occupations				
Armed forces	n.a.		−0.0483***	−0.00934
Managers	−0.0453***	−0.00931	−0.0944***	−0.00302
Professionals	−0.0350**	−0.0109	−0.0662***	−0.00338
Technicians & associated professionals	−0.0156	−0.0158	−0.0753***	−0.00288
Clerical support workers	−0.0260*	−0.0113	−0.0650***	−0.00301
Services & sales workers	−0.0258*	−0.011	−0.0532***	−0.00313
Skilled agricultural, forestry & fishery	0.00416	−0.0548	−0.0177*	−0.00849
Craft & related trades	−0.0202	−0.014	−0.0486***	−0.00329
Plant & machine operators/assemblers	−0.0253	−0.0146	−0.0534***	−0.00339
Ref: Firm size 50+ employees				
1–10 employees	0.00600	−0.01	0.0269***	−0.00278
11–19 employees	0.0136	−0.0143	0.00885**	−0.00337
20–49 employees	0.00214	−0.0115	0.00169	−0.00309
N	3362		107949	
Pseudo-R^2	0.174		0.118	

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. The industry categories are based on NACE Rev. 1.1. Years of experience not available in the 2006 data.
Source: EU SILC 2006 data.

5.3 WAGE PENALTY AND AT RISK OF POVERTY RATES

In this section we examine whether or not there is a wage penalty associated with being in temporary employment. These results control for other factors such as demographic characteristics (gender, age, immigrant status, etc.), education level, years of work experience, the sector and occupation of an individual as well as whether they work part-time, as a part-time wage penalty is commonly found in the literature. Given that these characteristics may themselves influence whether or not an individual is a temporary employee (see Tables 5.1 and 5.2), we overcome any potential bias related to self-selection into temporary employment by using a propensity score matching (PSM) technique.[18] This technique helps to ensure that

[18] PSM estimates are checked for robustness to unobserved heterogeneity bias using the Rosenbaum bounds sensitivity analysis. Essentially, this test measures the extent to which an unobserved factor must increase the odds that an individual will be assigned to the treatment group before the estimated impact of the treatment becomes unreliable.

the outcomes of the treatment group (i.e. the hourly wages of those in temporary employment) are comparable to those of the control group (i.e. the hourly wages of those in permanent employment) on a like-for-like basis, and that any wage penalty found for temporary employees can be attributed to their being in temporary employment and not to other observable[19] characteristics that make them more likely to be in temporary employment.

TABLE 5.3 WAGE PENALTY ESTIMATE – EU 27 AND IRELAND, 2014

	Hourly wage penalty estimate
EU 27, 2014	−0.29***
Ireland, 2014	−0.21***
EU 27, 2006	−0.35***
Ireland, 2006	−0.18***

Note: Estimated using propensity score matching. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
Source: EU SILC 2014 data.

The results are shown in Table 5.3, initially controlling for all the factors mentioned above.[20] They confirm that temporary employees do indeed face an hourly wage penalty compared to permanent employees. Across the EU 27 in 2006, the penalty was 35%. The figure was lower in Ireland, although still substantial at 18%. Across Europe the penalty had fallen to 29% by 2014, but it rose slightly in Ireland to 21%.[21]

Given the fact that we find a substantial wage penalty for those in temporary employment, even once we control for a wide range of characteristics such as sector, occupation and work experience, we now go on to examine whether temporary employees are more likely to live in a household at risk of poverty (AROP).[22] In these results we again control for a range of factors that may influence a person's likelihood of living in a household that is AROP, such as demographic characteristics, occupation, sector of employment, household type[23] and whether or not the individual is the highest earner in the household. We again use the PSM technique to take account of the fact that some of these characteristics may themselves influence the likelihood of being in temporary employment in the first place. The results (Table 5.4) confirm that those in temporary employment are

[19] This method controls for differences in observable characteristics between the two groups. Differences in unobservable characteristics cannot be measured.
[20] Specifically. we control for gender, age, health status, education level, country of birth, years of work experience, firm size, NACE sector and occupation.
[21] The Rosenbaum bounds analysis tells us that the EU 27 level analyses are highly robust while the Irish results are less robust to unobserved heterogeneity.
[22] I.e. if the household lives below the poverty line, which is defined as having an equivalised disposable income that is less than 60% of the median household equivalised disposable income.
[23] Specifically, a household consisting of 1 adult, no children; 1 adult with children; 2 adults, no children; 2 adults with children; 3+ adults, no children; 3+ adults with children.

more at risk of living in a household AROP. Across the EU 27 those in temporary employment were 9% more likely to live in a household AROP. In Ireland this figure is slightly lower at 7%.

TABLE 5.4 AT RISK OF POVERTY GAP ESTIMATE – EU 27 AND IRELAND, 2014

	At risk of poverty estimate
EU 27, 2014	0.09***
Ireland, 2014	0.07***

Note: Estimated using propensity score matching. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
Source: EU SILC 2014 data.

To get a more complete picture of the impact of temporary employment on job quality, we turn to CEDEFOP's European Skills and Jobs Survey (ESJS), within which we can link contractual status to job satisfaction.[24] The ESJS relates to 2014 and the incidence of temporary employment recorded in the data maps with that found in the EU SILC data. Table 5.5 indicates that despite very large pay penalties and elevated risks of belonging to a household at risk of poverty, employees on temporary contracts do not suffer from lower levels of job satisfaction. Part of the explanation of this apparent paradox may relate to specific reasons that lie behind worker decisions to accept jobs with temporary contracts. The ESJS collects information retrospectively on individual's primary motivations for accepting their current position, with respondents asked to rate the importance of factors from 0 (not at all important) to 10 (essential). Table 5.6 shows the percentages of employees on temporary and permanent contracts, rating the importance of factors as 7 or above.[25] The results suggest that workers on temporary contracts place much greater weight on the opportunity to gain experience and a much lower emphasis on job security and pay, which goes some way towards explaining the lack of a negative job satisfaction effect despite the presence of a substantial temporary employment pay penalty.

TABLE 5.5 JOB SATISFACTION – EU 27 AND IRELAND, 2014

	Job satisfaction[26]
EU 27, 2014	−0.010
Ireland, 2014	0.0317

Note: Estimated using propensity score matching. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
Source: ESJS 2014 data.

[24] Job satisfaction is not captured in EU SILC.
[25] Job factors are not mutually exclusive and respondents provide ranking scores for each factor.
[26] Job satisfaction is captured on a zero to 10 scale; values of 9 or 10 are taken to denote job satisfaction.

TABLE 5.6 IMPORTANCE OF FACTORS IN DECISION TO ACCEPT CURRENT JOB, IRELAND, 2014

	Permanent (%)	Temporary (%)
The job suited your qualifications and skills	64	66
You wanted to gain some work experience	55	65
The job provided security	74	63
The job offered good career progression/career development	62	58
The company/organisation was well known/respected in its field	56	59
The pay and package of benefits (e.g. insurance, bonuses, car) were good	57	49
The job was close to home	51	54
You were interested in the nature of the work itself	68	64
The job had a good work–life balance	62	57

Source: ESJS 2014 data.

5.4 LABOUR MARKET TRANSITIONS

We next exploit the longitudinal component of the QNHS in order to measure the short-run transitional behaviour of contingent workers; specifically, we are interested in (a) the extent to which temporary employment is a transitory state that constitutes a stepping stone to permanent employment and (b) the degree to which freelancers move between self-employment and other labour market states, such as employment and unemployment. Individuals remain in the QNHS for a maximum of five quarters, with approximately 20% of panel observations dropped in each quarter, thus of all individuals who enter the panel in Q1 2015 only 20% will still be in the sample by Q2 2016.

Given the structure of the data, we focus on very short-term transition patterns as sample sizes quickly diminish as the assessment period is extended beyond two quarters. Specifically, we restrict our sample to individuals who remain in the QNHS for at least two consecutive panels and assess the degree to which individuals experience changes in their labour market state over the course of two quarters. We examine freelancers, temporary workers, those in permanent contracts, the unemployed and the inactive to see whether or not their labour market status has changed in the following quarter and, if so, to what other labour market grouping.

The data (Table 5.7) reveal that freelancers tend not to change status over the short term, with over 95% of individuals identified as freelancers in a particular quarter maintaining their status three months later. We see much more movement among temporary workers, of those identified as such, almost 20% had changed status by the following quarter. Of those individuals moving out of temporary employment 52% moved into permanent employment while 48% became unemployed or inactive. Therefore, over the very short term, temporary employees are almost as likely to move out of employment as into permanent positions. With regard to other labour market statuses, there was very little quarterly change in the position of individuals who were on permanent contracts

or inactive. Just under two-thirds of unemployed individuals were still seeking work three months later, 22% had moved into inactivity, 8% had transitioned to permanent contracts and 5% to temporary employment.[27] The table also shows transitions after two quarters. Although the sample size is smaller, similar patterns emerge for many of the groups with very little change over two quarters in the status of freelancers and also for those with a permanent contract and the inactive. After two quarters, just over 25% of temporary workers had changed status. Of those transitioning out of temporary employment, just under 60% moved into permanent employment while just over 40% moved to unemployment or inactivity. For those who were unemployed, after two quarters, 53% remained unemployed while 13% had transitioned to permanent contracts, 7% to temporary contracts and the remaining 27% moved to inactivity.

We examine transition patterns more formally in Table 5.8 by pooling the data over all four QNHS quarterly samples, for each individual year (2004, 2008, 2012 and 2016), again restricting the sample to those who were in the data for at least two consecutive quarters and who were on temporary contracts, self-employed, unemployed or inactive in the previous quarter. We then create a binary variable for all individuals who transitioned into a permanent contract over the period and use a probit model to estimate the characteristics of individuals most likely to make this transition in each year. Crucially, the model suggests that individuals on temporary contracts were only marginally more likely to transition to a permanent contract than unemployed persons in 2016. Individuals on temporary contracts had a 1.6% probability to have made a transition to permanent status within three months in 2016 relative to the inactive. This compares to 1.4% for unemployed persons relative to the inactive.[28] During 2012, when the unemployment rate was very high, the transition probabilities of persons on temporary contracts were a good deal higher than those of the unemployed; however, during 2008 and 2004 the likelihood of moving into a permanent contract was again broadly similar for the two groups. Neither the descriptive nor the econometric evidence provides much support to the view that, at least in the very short term, temporary employment acts as an effective stepping stone to a permanent employment status.

[27] The table shows similar transition rates for movement into permanent positions from the unemployed and temporary employed groups. However, comparing across these two groups, the table reveals that around 8% of those who were temporary employed are unemployed or inactive one quarter on, whereas 86% of the unemployed group are either unemployed or inactive in the following quarter.

[28] At this time, in terms of composition, the unemployed were predominantly male and younger, with relatively high levels of education relative to the inactive (see Redmond and Whelan, 2017).

TABLE 5.7 QUARTER-ON-QUARTER TRANSITIONS, 2016 AVERAGES

	Freelancers (%)	Temp. (non-student) (%)	Permanent employed (%)	Unemployed (%)	Inactive (%)	*N*
Labour market state at time *t* – 1	**Labour market state at time *t***					
Freelancers	97%	*	*	*	*	743
Temp. (non-student)	*	82%	9%	4%	4%	1,845
Permanent employed	*	[0%]	98%	1%	1%	26,107
Unemployed	*	5%	8%	64%	22%	2,984
Inactive	*	0%	1%	2%	96%	27,444
						59,123
	Labour market state at time *t* + 1					
Freelancers	94%	*	*	*	*	293
Temp. (non-student)	*	74%	15%	[5%]	[6%]	756
Permanent employed	*	[0%]	97%	1%	2%	10,658
Unemployed	*	7%	13%	53%	27%	1,247
Inactive	*	1%	2%	2%	96%	11,575
						24,529

Note: Based on averages across all observations over the period 2016Q1 to 2016Q4. Where there are fewer than 30 persons in a cell, estimates are not considered reliable and are not given (denoted by * in table). Where there are 30–49 persons in a cell, estimates are considered to have a wider margin of error and should be treated with caution. These estimates are given in square brackets [].

Source: QNHS Micro Data.

TABLE 5.8 MARGINAL EFFECTS FROM PROBIT MODELS OF TRANSITIONS TO PERMANENT EMPLOYMENT

	2016		2012		2008		2004	
	Marginal effects	**Standard error**	**Marginal effects**	**Standard error**	**Marginal effects**	**Standard error**	**Marginal effects**	**Standard error**
Status in previous quarter (ref: inactive)								
Temporary worker	0.0166***	0.0029	0.0206***	0.0026	0.0123***	0.0016	0.0254***	0.0025
Unemployed	0.0136***	0.0022	0.0055***	0.0010	0.013***	0.0017	0.0250***	0.0025
Self-employed	−0.0053***	0.0006	−0.0063***	0.0005	−0.008***	0.0005	−0.0043***	0.0007
Age	−0.000	0.0001	0.0002*	0.0001	−0.0002*	0.0009	−0.0003**	0.0001
Age squared	−0.000**	0.0000	−0.0000***	0.0000	−0.000**	0.0000	−0.0000**	0.0000
Female	−0.0011	0.0006	−0.0011*	0.0005	−0.0007	0.0004	−0.0023***	0.0006
Married	0.0009	0.0006	0.0015**	0.0007	0.0011*	0.0005	−0.0013	0.0007
Education (ref: high ed)								
Low education	−0.0061***	0.0010	−0.0056***	0.0005	−0.0051***	0.0007	−0.0077***	0.0009
Medium education	−0.0021	0.0007	−0.0016**	0.0007	−0.0010*	0.0005	−0.0022**	0.0007
Non-national	0.0009	0.0010	0.0009	0.0005	0.0014*	0.0007	−0.0024*	0.0009
Region (ref: Dublin)								
Midlands	−0.0028	0.0007	−0.0009	0.0008	−0.0002	0.0009	0.0020	0.0014
West	−0.0016	0.0008	−0.0013	0.0007	−0.0016*	0.0006	−0.0019	0.0010
Mid-East	−0.0010	0.0009	0.0006	0.0009	−0.0006	0.0007	−0.0005	0.0010
Mid-West	−0.0015	0.0008	−0.0007	0.0007	−0.0025***	0.0005	−0.0030***	0.0009
South East	−0.0017*	0.0007	−0.0027***	0.0006	−0.0014*	0.0006	−0.0011	0.0009
South West	−0.0018*	0.0007	−0.0003	0.0006	0.000	0.0006	−0.0016	0.0008
Border	−0.0024**	0.0007	−0.0019**	0.0006	−0.0026***	0.0005	−0.0030**	0.0008
Quarter (ref Q4)								
Qtr 1	−0.0012	0.0007	−0.0019**	0.0005	0.0015*	0.0006	−0.0069***	0.0006
Qtr 2	0.0003	0.0007	−0.0010	0.0005	0.0010	0.0006	−0.0068***	0.0006
Qtr 3	0.0003	0.0007	−0.0010	0.0005	0.0003	0.0006	−0.0056***	0.0006

Number of observations	38,316		60,806		73,873		86,020	
Pseudo-R^2	0.2024		0.1782		0.2238		0.1882	
Log likelihood	−2640.48		−4341.42		−5513.89		−8096.32	
Prob > chi^2	0.000		0.000		0.000		0.000	

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
Source: QNHS Micro Data.

SECTION 6

Projections

We next assess the likely future path of contingent employment in Ireland to 2025. Generating projections for contingent employment involves several steps. In the first stage, we calculate sectoral employment projections using total employment growth projections from the ESRI's 2016 Economic Outlook (Bergin et al., 2016), which are then weighted by detailed sectoral projections from the European Centre for the Development of Vocational Training (CEDEFOP).[29] Using detailed sectoral projections ensures that we take account of any structural change in the economy. Overall employment growth is expected to continue at a robust pace over the medium term, with average annual growth of 2.3 per cent between 2016 and 2020 before it moderates slightly to 2.1 per cent per annum over the 2021–2025 period.

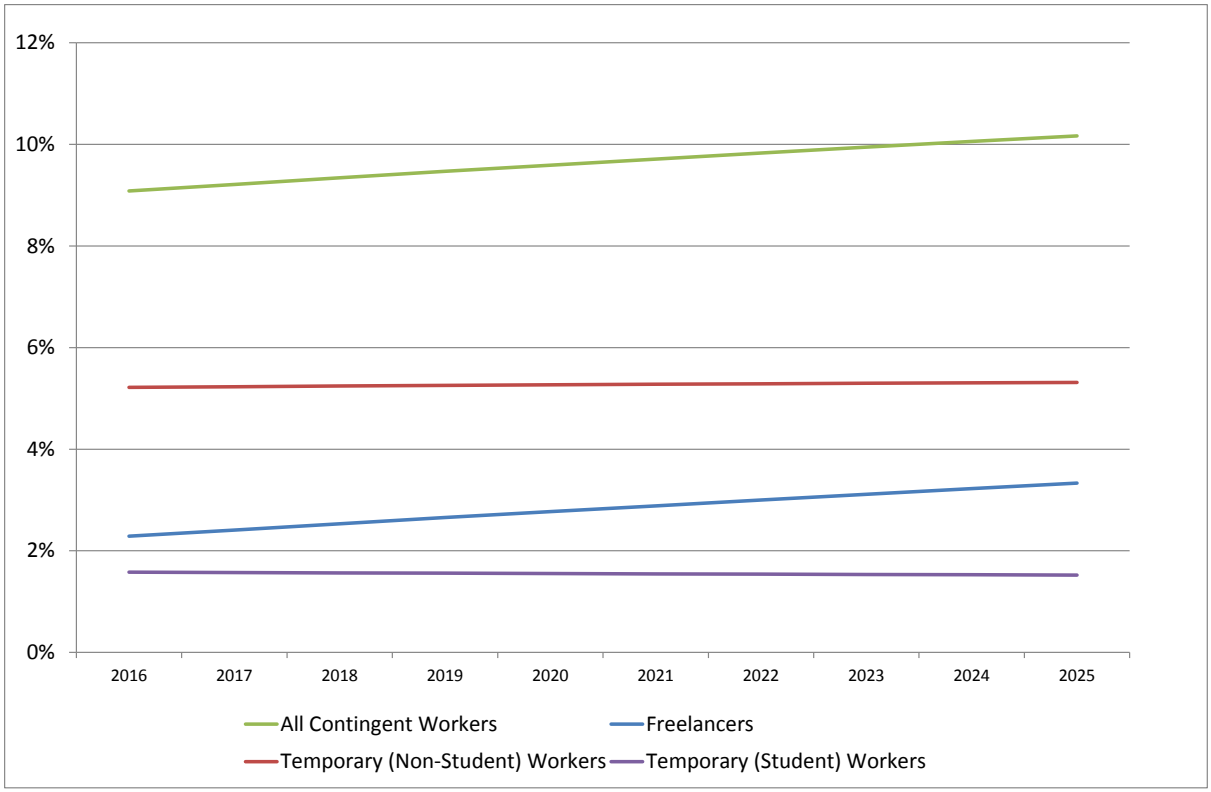
Then, to capture the share of temporary workers and freelancers in future employment, we calculate the shares of temporary and freelancer workers in each sector and apply these to the sectoral employment projections. We also allow for the sectoral employment shares of temporary (both student and non-student) and freelance workers to change over time according to the overall trends in contingent employment described in Section 3.1.[30] Although the share of temporary workers in total employment did increase over the crisis years, it has since reverted to its long-run trend, so we do not assume any additional shifts in the sectoral shares of these workers. For freelancers, the data show that their share in total employment has been increasing over time and we assume a pro-rata increase in their sectoral employment shares over the projection horizon.

The resulting projections are shown in Figure 6.1. Although total employment and contingent employment are expected to increase in the future, the share of contingent employment in total employment is likely to show only a very modest increase. Our projections show the share of contingent employment in total employment rising from 9 per cent in 2016 to 10 per cent in 2025. This increase is driven by an increase in the share of freelancers, with the shares of student and non-student temporary workers remaining broadly constant over the period.

[29] Available at http://www.cedefop.europa.eu/en/events-and-projects/projects/forecasting-skill-demand-and-supply/data-visualisations

[30] Furthermore, we assume students will make up around a quarter of temporary workers over the projection horizon. This is consistent with the long-run trend reported in Section 3.1 for the share of temporary workers who are students.

FIGURE 6.1 PROJECTIONS OF CONTINGENT EMPLOYMENT



SECTION 7

Summary and conclusions

Contingent employment generally describes an employment relationship that is non-permanent. The issue of contingent employment is certainly topical, not only in Ireland but internationally. Within an Irish context, concerns around precarious employment have led the government to introduce legislation strengthening the rights of workers with uncertain employment conditions and restricting certain types of employment contracts. However, despite the current widespread policy debate, relatively little is known regarding the incidence, trend or impacts of contingent employment in Ireland. This research seeks to bridge that gap.

The evidence from the QNHS suggests that the incidence of contingent employment in Ireland ranged between 8% and 9% of total employment between 1998 and 2010, increasing to a rate of over 10% following the recession before falling back towards its pre-recession level in 2016. The general trend in contingent employment is predominantly driven by changes in temporary employment, which make up around 80% of the total; however, the evidence does not support the view that either contingent or temporary employment has been increasing steadily over time. Freelancer employment, which accounts for the other 20% of contingent employment, has been increasing steadily over time; however, this accounts for only 2% of total employment. Furthermore, using the EU SILC data we find, from a comparative standpoint, that rates of contingent employment, and its various components, remain consistently below the EU 27 average and the rates evident in countries also hit hard by the global recession, such as France, Italy and Spain. Nevertheless, the incidence of contingent (and temporary) employment in Ireland has remained consistently above that of the UK labour market over the period 2006 to 2014.

The research finds that while temporary contracts are concentrated among groups and sectors typically in receipt of lower rates of pay within the EU 27 such as young people, non-nationals, persons with limited education and those employed in unskilled occupations and small firms, this was not the situation in Ireland. Taken as a whole, the data would suggest that temporary employment is not a predominantly low-skilled occupation, with temporary workers found across all education levels, sectors, occupations and organisational sizes. This conclusion is supported by the results from a wage equation model which demonstrated that temporary workers in Ireland experienced a pay penalty that is around one-third less than the comparable EU 27 estimate for the same period. Although the likelihood of living in a household at risk of poverty in Ireland is 7 percentage points higher for those in temporary compared to permanent employment, this figure too is below the EU 27 average of 9 percentage points.

Results using CEDEFOP's European Skills and Jobs Survey (ESJS) show that despite very large pay penalties and elevated risks of belonging to a household at risk of poverty, employees on temporary contracts do not suffer from lower levels of job satisfaction. Part of the explanation of this apparent paradox may relate to specific reasons that lie behind worker decisions to accept jobs with temporary contracts. We present evidence showing that workers on temporary contracts place much greater weight on the opportunity to gain experience and a much lower emphasis on job security and pay, which goes some way towards explaining the lack of a negative job satisfaction effect despite the presence of a substantial temporary employment pay penalty.

With regard to labour market transitions, while it was found that freelancers tend not to change status over the short term, much more movement was evident among temporary workers. Of those identified as temporary workers, almost 20 per cent had changed status by the following quarter and, of these, just over half moved into permanent employment while 42 per cent became unemployed or inactive. Therefore, over the very short term, temporary employees are almost as likely to move out of employment as into permanent positions. Furthermore, our formal models suggest that individuals on temporary contracts were only marginally more likely to transition to a permanent contract than unemployed persons in 2016. Therefore, the evidence suggests that, at least in the very short run, temporary employment in Ireland does not constitute a stepping stone to permanent employment status.

Finally, we assess the likely future path of contingent employment in Ireland to 2025 using detailed sectoral employment projections and information on the existing trends in contingent employment. Although total employment and contingent employment are expected to increase in the future, we find that the share of contingent employment in total employment is likely to show only a modest increase. Our projections show the share of contingent employment in total employment rising from 9 per cent in 2016 to 10 per cent in 2025, with this increase driven by a rise in the share of freelancers.

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APPENDIX

TABLE A1 DETERMINANTS OF TEMPORARY EMPLOYMENT, MARGINAL EFFECTS FROM PROBIT MODELS 2014

	Marginal effect	Standard error
Female	−0.0162***	0.0019
Age	−0.0087***	0.0004
Age squared	0.0001***	0.000
Part-time	0.1265***	0.0039
Education (ref: low ed.)		
Medium education	−0.0091**	0.0026
High education	−0.0021	0.0028
Married	−0.01971***	0.0021
Non-national	−0.0070**	0.0024
Sector (ref: Education (P))		
Agriculture, forestry and fishing (A)	−0.0293***	0.0031
Manufacturing (C)	−0.0202***	0.0025
Construction (F)	−0.0140***	0.0034
Wholesale and retail trade; repair of motor vehicles and motorcycle (G)	−0.0469***	0.0015
Transportation and storage (H)	−0.3272***	0.0022
Accommodation and food service activities (I)	−0.0337***	0.0017
Information and communication (J)	−0.0293***	0.0023
Financial and insurance activities (K)	−0.0284***	0.0022
Professional, scientific and technical activities (M)	−0.0301***	0.0021
Administrative and support service activities (N)	−0.0242***	0.0027
Public administration and defence; compulsory social security (O)	−0.0350***	0.0019
Human health and social work activities (Q)	−0.0285***	0.0020
Arts, entertainment and recreation (R)	−0.0160**	0.0040
Other service activities (S)	−0.0257***	0.0028
Rest	−0.0179***	0.0037
Firm size (Ref: 50+ employees)		
1–10 employees	0.000	0.0021
11–19 employees	−0.0044	0.0028
20–49 employees	−0.0040	0.0023
Number of observations	60,595	
Prob > chi^2	0.000	
Pseudo-R^2	0.1353	
Log likelihood	−12537.25	

Note: This is purely a robustness check for the analysis using EU SILC data. Students are excluded for the analysis. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Source: QNHS Micro Data.

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