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A STUDY OF SUB-MINIMUM WAGE RATES FOR YOUNG PEOPLE

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Final Report to the Low Pay Commission

Elish Kelly and Seamus McGuinness

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Executive Summary

This report provides an overview of sub-minimum wage rates for young people, in terms of both incidence and impact. The study relies primarily on a review of the relevant international literature and also provides contextual analysis specific to Ireland by analysing relevant available datasets, namely the Quarterly National Household Survey (QNHS) and the 2009 National Employment Survey (NES), both of which are compiled by the Central Statistics Office.

SUB-MINIMUM RATES

Over two-thirds of OECD countries have statutory minimum wages and, of these, just under two-thirds have special rates for young people. The evidence demonstrates that, in terms of their construction and design, youth rates are predominately expressed as some proportion of the adult minimum wage rate.

While most sub-minimum wage rates for young people are age-based, there are a few exceptions, such as France where the young person's experience levels are also taken into account. Where OECD countries have apprenticeship/trainee pay rates, the rates tend to be separate from their sub-minimum wage rates for young people. In addition, the rates are not restricted to youths.

In relation to the economic effects of sub-minimum wage rates, as with the international literature on minimum wages generally, the effects of the policy on young peoples' employment or continued education decisions, whether positive or negative, have been found to be small and weak, and sometimes insignificant.

It has been argued that paying all workers, irrespective of age, the same statutory national minimum wages would incentivise early school leaving (OECD, 2015b). We find that the variation in early school leaving rates in Ireland follows a cyclical movement, rising when employment and earnings is high and falling when they are low. However, it is unclear to what extent the pattern relates to changes in the general levels of earnings, changes in minimum wages, variations in the unemployment rate, some combination of all three, or some other factors.

THE INCIDENCE AND DETERMINANTS OF MINIMUM WAGE EMPLOYMENT

The Irish data from 2009 suggest that the incidence of the adult minimum wage ranged between 5.3 and 6.8 per cent. A very small percentage, typically less than 0.5 per cent, of employees were in receipt of either the training or youth rates of

the National Minimum Wage (NMW). Furthermore, the data revealed that less than 6 per cent of employees aged below 18 were in receipt of the youth rates. According to the data, 29 percent of employers in 2009 hired at least one worker on the NMW.

While personal and job characteristics such as age, education, gender, contractual status or being employed in particular sectors do impact an individual worker's likelihood of being in receipt of the NMW, such factors only increase the level of risk by very small amounts.

With respect to minimum wage paying firms, employing workers without formal qualification raises the probability that a firm will pay the NMW by around 10 percentage points; other organisational characteristics have a much lower impact. Sectoral effects are much more important for firms than individuals, with companies operating in the Wholesale and retail, Information and communication, and Education sectors approximately 15 per cent less likely to pay the NMW relative to firms in Construction.

Chapter 1

Literature Review of Sub-Minimum Wage Rates for Young People

1.1 INTRODUCTION

This report provides an overview of sub-minimum wage rates for young people, in terms of both incidence and impact. The study relies primarily on a review of the relevant international literature and also provides contextual analysis specific to Ireland by analysing relevant available datasets, namely the Quarterly National Household Survey (QNHS) and the 2009 National Employment Survey (NES), both of which are compiled by the Central Statistics Office (CSO).¹

1.2 INTERNATIONAL OVERVIEW OF EXISTING MINIMUM WAGE RATE PRACTICE

According to the Organization for Economic Co-operation and Development (OECD) (2015a and 2015b), 26 out of 34 OECD countries currently have statutory national minimum wages. Nine of these countries have introduced a legal National Minimum Wage (NMW) since 1990, with Germany doing so as recently as January 2015. The OECD's six enhanced engagement partners (Brazil, China, India, Indonesia, Russia and South Africa) also have statutory minimum wages, as do some of the countries seeking OECD membership (Colombia, Costa Rica, Latvia and Lithuania).

For the eight OECD countries that have no NMW, sector- or occupation-level collective agreements are the main mechanisms used to set minimum pay rates (OECD, 2015a). These countries are Austria, Denmark, Finland, Iceland, Italy, Norway, Sweden and Switzerland. According to Garner (2015), collective bargaining systems can provide more flexibility (as they allow for wage floors to vary by sector and/or worker characteristics), enable social partners to retain their autonomy in the wage setting process, and tend to result in higher minima than statutory minima. At the same time, however, a large number of sector/occupation-specific minimum wages can result in less compliance and make the wage floors harder to enforce. In addition, the effectiveness of these wage setting mechanisms has been reduced in recent times by the decline in

¹ We would like to thank the CSO for providing us with access to these two datasets for the purposes of this research work.

collective bargaining coverage. This, in turn, has resulted in debates in some of the countries with collective bargaining systems on the introduction of a statutory minimum wage. For example, this was one of the principal reasons why Germany introduced its NMW in 2015. In Italy, the Government was due to introduce a legal hourly minimum wage on an experimental basis in those sectors not covered by collective agreements, but they withdrew this decision following concerns raised by Italian trade unions (Eurofound, 2016).² There are, however, some countries with statutory minima where collective bargaining plays a role, but the interactions can be complex and, according to Grimshaw and Bosch (2013), such systems exhibit both tensions and complementarities. According to the ILO (2015), changing economic structures and practices within a country can weaken the ability of collective bargaining systems to protect low pay levels. On this basis, the ILO advocates that an appropriate statutory minimum wage policy – in combination with whatever degree of collective bargaining exists – is needed to protect vulnerable workers and address income inequalities.

In relation to EU Member State countries that are not members, or are seeking membership, of the OECD, Bulgaria, Croatia, Malta and Romania have statutory minimum wages, while Cyprus does not. Low pay in Cyprus is not governed by collective agreements either. Instead, minimum wages are set by the government for specific occupations (Eurostat, 2015). However, as a result of the recent economic crisis the relevant legislation governing occupation-specific minimum wages in Cyprus has not been renewed since April 2012 (Eurofound, 2016).

The International Labour Organization (ILO) (2014) has found that interest in the minimum wage as a policy tool for reducing income inequalities and poverty reduction has been renewed since the early 2000s, and particularly so since the recent global economic crisis. Specifically, 11 new countries have signed up to the ILO's Minimum Wage Fixing Convention (1970, No. 131) since January 2000. Furthermore, the Global Jobs Pact, which was adopted by the International Labour Conference in 2009, makes many references to the use of statutory minimum wages as a way of responding to the global crisis.

As countries have recovered from the global crisis, the statutory minimum wage level relative to median wages has risen in many OECD countries (OECD, 2015b). However, there are a few countries where the ratio of minimum to median wages fell between 2007 and 2013. Such countries include the Czech Republic, Greece, Ireland, Spain and Turkey, with the reduction being greatest in Ireland (-10 per

² The Italian government considered introducing a statutory minimum wage in the reform of its Jobs Act, but they held off from doing this because of criticism from trade unions.

cent).³ Apart from Greece, the fall in the ratio between the minimum and median wages in the other countries was due to a freeze in the nominal value of the minimum, or from keeping adjustments below inflation. In Greece, however, the fall was due to a cut in the nominal value of its minimum wage (OECD 2015b).⁴ Regarding Ireland, the ratio between the minimum and median wages fell because the nominal value of its minimum wage did not change between 2008 and 2013. There was a brief cut to the Irish minimum wage rate in February 2011 from €8.65 to €7.65, but the rate was restored to its original hourly rate in July 2011. This €1 per hour rate cut was one of the commitments the Irish Government signed up to in the Memorandum of Understanding that it signed with the EU, ECB and IMF (i.e. the Troika) in 2010. The cut took effect in February 2011, but it was subsequently reversed in July of that year after a revised Memorandum of Understanding was signed between the Irish Government and the Troika in May 2011. This reversal in the NMW cut was offset by a 50 per cent cut in the amount of Pay Related Social Insurance (PRSI) employers had to pay on wages up to the level of the minimum wage.

Although 26 OECD countries have statutory minimum wages, the mechanisms used to establish their NMW,⁵ along with coverage⁶ and employer compliance, differ considerably (OECD, 2015b). The same also holds for the non-OECD countries that have ratified the ILO's Minimum Wage Fixing Convention (No. 131). The actual take-home pay of minimum wage workers after taxes and other mandatory wage deductions, along with the costs of employing minimum wage workers, also varies across countries. The OECD (2015b) estimates that the average burden from income taxes and social contributions for individuals on the minimum wage in its member countries amounts to one-third of their gross-earnings, with the employee and employer paying an equal share of this burden. To counter this, some countries have introduced payroll-tax rebates for companies hiring minimum-wage workers, and/or 'in-work benefits' to support the take-home pay of individuals on low earnings (OECD, 2015b).

³ This figure captures the ratio of minimum wages to median earnings of all full-time employees. The source of the data is the OECD's Minimum Wages Database, <http://dx.doi.org/10.1787/data-00313-en>. According to this source, the Irish minimum wage data were provided by national authorities, while the median and mean wage data were provided by the Central Statistics Office. At least for the 2003 and 2006 Irish median and mean wage data in this database, the data were extracted from the National Employment Surveys for those two years.

⁴ In 2012, Greece cut its minimum wage by 22 per cent for unskilled workers aged 25 and over, and by 32 per cent for those under 25 (ILO, 2015).

⁵ See ILO (2014) for a detailed description of the mechanisms used across its member states to establish minimum wage rates.

⁶ Self-employed workers are not covered by statutory minimum wage. Other groups of workers can be excluded as well, which varies by country (see ILO, 2014; and OECD, 2015b). In addition, countries minimum wage systems can vary by region, sector and occupation. Other criteria used to difference minimum wage rates include gender, age, nationality and disability (see ILO, 2014). Those countries that have signed up to the ILO's Minimum Wage Fixing Convention (No. 131) need to observe the principle of 'equal remuneration for work of equal value'; thus, the ILO requires countries that have implemented differentiated minimum wage rates on the basis of gender, age, etc., to re-examine these rates on a regular basis to ensure that such groups are not being discriminated against.

According to the ILO (2014), of the 52 countries that have ratified Convention No. 131 (i.e. its Minimum Wage Fixing Convention), 19 have excluded certain groups of workers from their statutory NMW.⁷ The exclusions include agricultural workers (e.g. Bolivia, Lebanon, Syrian Arab Republic, etc.), domestic workers (e.g. Bolivia, Chile, France, etc.), public service employees (e.g. Chile, Japan, etc.), non-industrial sector workers (Nepal), family businesses (Lebanon), small enterprises (Portugal),⁸ elderly workers (Chile),⁹ intermittent workers (Republic of Korea), workers on probation (Republic of Korea), workers with disabilities (Chile, Netherlands and Republic of Korea), trainees (Republic of Korea)¹⁰ and apprentices (Chile and Ireland)¹¹ (ILO, 2014).¹² In some countries, young people are not covered by the statutory national minimum wage (e.g. Lebanon and the Bahamas);¹³ while in other countries young workers are paid a fraction of the minimum wage that applies to the adult working population. The same is true for young people in apprenticeships and undergoing training (ILO, 2014). At its last meeting, the ILO Committee of Experts on the Application of Conventions and Recommendations urged all governments to consider extending the application of their minimum wage systems to cover those groups of workers that are most vulnerable to poverty, and also to protect employers from unfair competition from those that implement low wages (ILO, 2014).

Regarding young people, although many countries espouse the principle of equal pay for work of equal value, there are, as mentioned briefly above, a number of countries that have established separate minimum wage rates for young people. Of those OECD countries with statutory minimum wages, approximately half of them have established sub-minimum rates for young people (see Appendix Table A.1). One of the justifications put forward for the establishment of separate minimum wage rates for youths is that young people have lower productivity than older workers who have some work experience and, therefore, should be paid less (OECD, 2015b). Related to this, another rationale for sub-minimum rates rests with the concern that increases in statutory minimum wages will give rise to higher levels of unemployment among young people as firms will cease to hire them on the grounds that their labour costs exceed their productivity levels.

⁷ ILO Recommendation No. 135 allows countries to fix a single minimum wage for general application and also a series of minimum wages to apply to particular groups of workers.

⁸ Defined as businesses employing up to five workers.

⁹ Defined as over 65.

¹⁰ Workers engaged in vocational training.

¹¹ Apprentices are excluded from the national minimum wage in Ireland and Chile. In Burkina Faso, this group of workers are excluded from the guaranteed interoccupational minimum wage, from the Minimum Wage Ordinance in China (Hong Kong Special Administration Region), and from the relevant minimum wage legislation in Trinidad and Tobago as well (ILO, 2014).

¹² See ILO (2014) for other categories of workers that some countries exclude from their statutory national minimum wage.

¹³ In the Lebanon, this applies to young people aged less than 18, while minimum wage legislation in the Bahamas does not apply to children or young people (ILO, 2014).

Finally, there is a fear that increases in a general minimum wage to cover all workers would negatively impact young peoples' human capital accumulation, and that this could have long-run consequences for a country's productivity and growth levels. Specifically, there are concerns that increases in statutory national minimum wages would incentivise early school leaving (OECD, 2015b).¹⁴

The remainder of this section will focus on examining the sub-minimum wage rates of those countries that have implemented such rates for young people. Specifically in terms of:

1. outlining the countries that have such rates;
2. the format that the rates take (e.g. aged-based, duration in employment, etc.);
3. if there is a link with the country's adult NMW rate;
4. how apprenticeships and trainee workers are treated; and
5. evidence on the impact of youth minimum wage rates (e.g. employment, education, etc.).

1.3 MINIMUM WAGE RATES FOR YOUNG PEOPLE

A number of countries with statutory minimum wages do not have separate rates for young people. Regarding EU/OECD Member States; Belgium, Bulgaria, Croatia, the Czech Republic, Estonia, Germany, Hungary, Latvia, Lithuania, Poland,¹⁵ Romania, Spain and Slovenia do not have separate minimum wage rates for youths (OECD, 2015a and 2015b). The same is true for the following non-EU/OECD countries: Azerbaijan, Belarus, Benin, Cameroon, Côte d'Ivoire, Central African Republic, Cuba, Ecuador, Gabon, Georgia, Honduras, Mali, Mozambique, Niger, Peru, the Philippines, Seychelles, Timor-Leste, and Togo (ILO, 2014).

Belgium used to have separate sub-minimum wage rates for individuals aged 20 or less, but between April 2013 and December 2014 these differentiated rates (see Appendix Table A.2) were phased out for those aged 18 to 20. Thus, as of 1 January, 2015 the same rate applies to all individuals aged 18 and above.¹⁶ For those aged less than 18, the sub-minimum wage rates still apply. However, in

¹⁴ Another argument put forward for the establishment of youth minimum wage rates is that employers need to be compensated for the costs of training investments that they make in their young employees (Grimshaw, 2014).

¹⁵ Poland's statutory NMW applies to all workers. However, employers are allowed to pay workers who are in their first year of employment 80 per cent of the NMW. Nova Scotia (Canada) has a similar system in place since 2013, where inexperienced workers (defined as individuals with less than three months experience of the work being performed) may be employed for three months at a lower hourly minimum wage rate: specifically, they can be paid 50 cent less than the hourly minimum wage for experienced workers (ILO, 2014).

¹⁶ Regardless of age, the minimum wage in Belgium does not apply to workers who are engaged in work for less than a period of one month (ILO, 2014).

Belgium the compulsory school leaving age is 18; thus, the sub-minimum rates only apply to a minority of students who pursue a part-time vocational school track. In fact, the OECD and ILO classify Belgium as having abolished their sub-minimum rates for young people, which is the reason for its placement in this category of countries with no sub-minimum wage rates for young people. In Belgium the NMW only applies in the absence of a collective agreement, which is negotiated on by the social partners at the sectoral level. In general, the sectoral minimum wages tend to be higher than the NMW; however, it could be the case that in some industries the sectoral minimum wage is lower than the NMW for young people aged below 21 (see Appendix Table A.2).¹⁷

As with Belgium, Spain,¹⁸ Korea¹⁹ and the Czech Republic²⁰ abolished their sub-minimum youth wage rates. All provinces in Canada,²¹ apart from Ontario, have done likewise; while New Zealand has moved to a statutory 'Starting-out Wage' (Grimshaw, 2014). New Zealand's system is discussed in further detail below.

While Germany does not have separate sub-minimum wage rates for young people, the statutory NMW rate does not apply to workers aged less than 18 (OECD, 2015b).²² A similar situation holds in Latvia. However, by law, young people less than 18 years of age have a shorter working week compared to adults (Lincaru and Ciucă, 2014). Consequently young people in Latvia get paid, on average, a higher hourly minimum wage rate compared to adult workers: this figure is currently 114 per cent of the adult rate (OECD, 2015a).²³

The OECD countries²⁴ that have implemented sub-minimum wage rates for young people are as follows: Australia, Canada,²⁵ Chile, France, Greece, Ireland, Israel,²⁶ Luxembourg, the Netherlands, New Zealand, Portugal, Slovak Republic, Turkey,

¹⁷ Information provided by Bart Cockx, IZA Research Fellow and Research Professor at SHERPPA, Ghent University.

¹⁸ Spain has not had sub-minimum wage rates for young people since 1998 (Grimshaw, 2014).

¹⁹ Korea abolished its youth minimum wage rates in 2005. Prior to this, all young people aged less than 18 were entitled to 90 per cent of the adult NMW for the first six months of their employment. Now all workers in Korea, regardless of age, with less than three months work experience are paid 90 per cent of the NMW (Grimshaw, 2014).

²⁰ The government abolished its youth minimum wage, which consisted of two differentiated rates (less than 18 years of age, 80 per cent of the statutory NMW; and 18-21 years of age, 90 per cent of the statutory NMW) in January 2013 (OECD, 2014). However, according to Janičko (2012) sub-minimum rates for young people aged less than 22 with a disability that restricts their employability are still permitted.

²¹ Sub-minimum wage rates were abolished in the provinces during the 1980s and 1990s (Grimshaw, 2014).

²² Long-term unemployed individuals who return to work are not covered by Germany's minimum wage legislation for the first six months of their employment.

²³ In Latvia, its labour law provides that the monthly wage for young people employed in accordance with the working time prescribed for those aged less than 18 will not be less than the minimum monthly salary applicable to normal working time (ILO, 2014).

²⁴ Members, partners and those countries seeking OECD membership.

²⁵ Ontario only (see Table A.2).

²⁶ The Minister of Labour and Social Affairs has the authority, if he/she so wishes, to fix a reduced minimum wage rate for workers aged less than 18 (ILO, 2014).

the United Kingdom (UK), the United States, and Costa Rica. Chad, Mauritania,²⁷ Mauritius,²⁸ Tunisia,²⁹ Uruguay,³⁰ India,³¹ Pakistan³² and Malta have youth minimum wage rates as well (ILO, 2014).

As can be seen from Appendix Table A.1, which lists most of the countries mentioned in the previous paragraph with sub-minimum wage rates for young people, the age used to define youths varies across the countries that have implemented such rates, with 24 appearing to be the upper age limit (Greece). For almost all countries, the youth minimum wage rates are a percentage of the standard/adult NMW rate, with considerable variation across the countries on the size of this percentage. This can be seen from Appendix Table A.2.

Australia's most recent National Minimum Wage Order, which is reviewed annually, commenced on 1 July 2015. Under this order, the adult national minimum wage was set at \$17.29 per hour.³³ The Fair Work Commission in Australia also sets special national minimum wage levels for i) employees with a disability whose disability does not affect their productivity, ii) employees with a disability whose disability does impact on their work capabilities, iii) young people aged 16 to 20, iv) employees who are apprentices, and v) employees to whom a training arrangement applies. Regarding Australia's sub-minimum rates for young people, the rates are broken down into six age-related categories (see Appendix Table A.2) and are linked to the adult national minimum wage rate. All of Australia's NMW Orders cover employees that are not covered by an enterprise agreement or a modern award (i.e. an award that covers a whole industry or occupation). Most modern awards apply reductions for young people aged 15-20 (ILO, 2014).

The UK has two separate youth minimum wage rates, which are set by the government annually following recommendations from its Low Pay Commission. The first rate covers those aged 15-17 and the second youths aged 18-20. As with most countries with sub-minimum wage rates for young people, both rates in the UK are a percentage of the statutory adult rate; currently, this is 58 per cent for

²⁷ A legal order can be used to set rates of reduction in the adult NMW for those aged under 18 (ILO, 2014).

²⁸ Sub-minimum wage rates for young people aged 15-17 apply only in the sugar and tea industries (ILO, 2014).

²⁹ Young people aged less than 18 in the non-agricultural sector are paid a minimum 85 per cent of the adult NMW rate. The guaranteed agricultural minimum wage (SMAG) is not applicable to young people aged less than 18.

³⁰ It is at the discretion of Wage Councils to take account of the age of certain workers in an industrial or commercial establishment when setting wages (ILO, 2014).

³¹ Subminimum wage rates can be set for children aged less than 14 and those aged 14-17.

³² The Minimum Wage Council, at the request of the provincial government, recommends the minimum wage rate for young people aged less than 17 in the industrial firms in the province.

³³ Based on a 38 hour week, this equates to \$656.90 per week.

those aged 15-17 and 79 per cent for young people aged 18-20.³⁴ Currently, the hourly minimum wage rate for those aged 15-17 is £3.87, while it is £5.30 for those aged 18-20.³⁵ The justification put forward by the UK Government for separate minimum wage rates for young people is that they do not want the set rates to encourage young people to alter their schooling or training decisions (i.e. drop out before completion), or to restrict the opportunities available to young people who decide to enter the labour market (ILO, 2014). On April 1, 2016, the UK introduced a new National Living Wage (NLW). The NLW rate, which is mandatory, is £7.20 per hour. This rate applies to all workers aged 25 and over, while the existing statutory NMW (£6.70 per hour) will continue to apply to all workers aged 21-24 years.³⁶

The Netherlands has separate sub-minimum rates for youths aged 15 to 22 years of age, which are, again, linked to the NMW rate (see Appendix Table A.2). The government reviews its rates twice a year, on 1 January and 1 July, to ensure that the rates remain in line with changes in average collectively agreed wages in the country.³⁷ As with the UK, the Government of the Netherlands has implemented separate sub-minimum rates for youths on the basis that such rates help to ensure that they do not drop out of school early and to prevent unemployment rising among those young people who choose to enter the labour market (ILO, 2014).

As part of their first economic adjustment programme with the International Monetary Fund (IMF), Greece introduced a sub-minimum wage rate for young people. Effective from 1 March 2012, the Greek government cut the monthly minimum wage rate for individuals aged 25 and over by 22 per cent to €586.08 per month,³⁸ while for young people (defined as those aged less than 25) the NMW was reduced by a further 10 percentage points to €510.95 a month³⁹ (ILO, 2014).⁴⁰ Regardless of the young person's age when hired at the minimum wage, employers can pay that individual the lower sub-minimum rate for three years (Yannelis, 2014). The sub-minimum wage rate for young people was introduced

³⁴ These percentages vary over time, and the current percentages for 2015 were derived using the statutory and youth minimum wage rates information that is provided on the UK's Low Pay Commission website: www.gov.uk/national-minimum-wage-rates.

³⁵ These current rates were set in October 2015, with the hourly adult rate set at £6.70. The next rates update will take place in October 2016. The age groups used by the UK Government were different prior to 2010 www.gov.uk/national-minimum-wage-rates.

³⁶ www.gov.uk/government/publications/national-living-wage-nlw/national-living-wage-nlw.

³⁷ www.government.nl/topics/minimum-wage/contents/amount-of-the-minimum-wage.

³⁸ €26.18 a day for skilled workers.

³⁹ €22.83 a day for skilled workers.

⁴⁰ In December 2012, the Greek government made a commitment to change the system used to establish its minimum wage rates. Specifically, collective bargaining has been replaced with the government setting the rates after consultation with the social partners and a group of independent experts. This new minimum wage setting mechanism will come into effect after completion of Greece's economic adjustment programme (ILO, 2014).

by the Greek government as a means of addressing the country's high youth unemployment rate (Yannelis, 2014).

Like most countries, Luxembourg's sub-minimum wage rates for young people, of which there are two, are age-based and are a percentage of the adult NMW (see Appendix Table A.2). In Luxembourg, the adult NMW is known as the Social Minimum Wage (SMW). The youth minimum wage rates, along with the adult SMW, can be adjusted every two years to ensure that the rates are in line with the cost of living in Luxembourg.⁴¹ Chile's youth minimum wage rate is age-based and is a percentage of the adult NMW rate; the same applies to Portugal, Malta, the Slovak Republic and Turkey's sub-minimum rate for youths (see Appendix Table A.2).

While France has sub-minimum wage rates for those aged less than 18 (young people aged less than 17 are paid 80 per cent of the adult NMW rate, while those aged 17-18 years are paid 90 per cent), the rates do not apply when such individuals have six months of professional experience in their area of work (ILO, 2014).

Chad has two sub-minimum wage rates for young people, one for those aged 14-16 (60 per cent of the adult NMW) and the second for those aged 16-18 (80 per cent of the adult rate). However, young people who have obtained a Certificate of Professional Ability (CAP),⁴² which is a certificate that is awarded after three years of vocational study,⁴³ are exempt from these sub-minimum wage rates. Also exempt from these reduced rates are young people who have successfully passed the leaving exam of a centre for accelerated vocational training (ILO, 2014).

As opposed to an age-based minimum wage rate for young people, New Zealand has a statutory 'Starting-out Wage', which, while it applies to certain categories of young people, is based on continuous time spent in a job. New Zealand introduced this new minimum wage structure for young people on 1 May 2013, and it applies to 16- to 19-year-olds that are commencing employment for the first time. There are three specific categories that this starting-out wage applies to: i) 16- to 17-year-olds who have not completed six months of continuous employment with their current employer; ii) 18- to 19-year-olds who have received a specified social welfare payment for six months or more and have not

⁴¹ www.guichet.public.lu/entreprises/en/ressources-humaines/remuneration/paiement-remunerations/salaire.

⁴² Certificat d'Aptitude Professionnelle.

⁴³ NAFSA: Association of International Educators (2011). *Online Guide to Educational Systems Around the World – Chad*. www.nafsa.org/_/File/_/ges/Chad.pdf.

completed six months of continuous employment with any employer during the period of their social welfare payment; and iii) 16-19-year-olds who, as part of their employment contract, need to undertake industry training (up to a minimum of 40 credits per annum) in order to become officially qualified in their chosen occupation.⁴⁴ If a 16-19 year old is training or supervising other employees, then he/she is paid the adult NMW. In addition, if a 16-19-year-old was employed prior to turning 16, then this period of time spent working must be taken into consideration when calculating the duration of time the individual has been continuously employed after he/she turns 16. Once 16-19-year-olds complete six months of continuous employment with the same employer, he/she must be paid the adult NMW rate. The New Zealand Government does not have a sub-minimum wage rate for individuals aged less than 16. All minimum wage rates are reviewed annually.

In the United States, their lower federal minimum wage rate for young people aged less than 20 only applies for the first 90 consecutive calendar days following recruitment (ILO, 2014).

Ireland's sub-minimum rates for young people are based on a combination of age and work experience. Specifically, those aged less than 18 are paid 70 per cent of the adult NMW. After individuals reach the age of 18, there is a difference in the rate paid according to work experience duration. In particular, after an individual turns 18 years of age he/she is entitled to 80 per cent of the NMW if he/she is in their first year of employment, while an employee who is in their second year of employment since the date of first employment over the age of 18 is paid 90 per cent of the NMW. Individuals aged 18 and above with more than two years of employment are paid the adult NMW rate, which is currently €9.15 (1 January 2016).

1.4 APPRENTICESHIPS AND TRAINEE WORKERS

In some countries, apprentices, regardless of age, are excluded from that country's statutory NMW (e.g. Ireland, Chile, Burkina Faso, China, and Trinidad and Tobago),⁴⁵ while in other countries this group of workers are covered by NMW legislation (e.g. Dominican Republic, Honduras, Spain and the Syria Arab Republic).⁴⁶ In others still, legislation is in place stipulating that apprentices receive a specific remuneration.⁴⁷ This is usually a percentage of the country's statutory NMW: for example, Bulgaria (90 per cent of the NMW), Paraguay (60

⁴⁴ <http://employment.govt.nz/er/pay/minimumwage>.

⁴⁵ In Zambia, commercial sector apprentices do not receive the minimum wage for that sector (ILO, 2014).

⁴⁶ ILO (2014).

⁴⁷ In Slovenia, apprentices are entitled to a wage equal to 70 per cent of the base wage for the specific occupation that he/she is receiving training. Whatever this rate, it cannot be lower than the NMW (ILO, 2014).

per cent of the NMW) and the Philippines (75 per cent of the NMW).⁴⁸ Some countries have legislated that apprentices should receive pay equal to at least the NMW after a certain period of time (e.g. El Salvador, Mali and Portugal). In a lot of countries, apprentices pay varies according to their i) age, ii) level of training or iii) level of progress in the apprenticeship programme. This includes Algeria, Belgium, Colombia, France, Gabon, Pakistan and Tunisia (ILO, 2014).

There are a number of countries where the remuneration of apprentices is determined by the authority in charge of apprentices, or the social partners (e.g. through, for example, collective agreements), as opposed to the legislature (e.g. Luxembourg). Others still rely on the will of the parties, through the apprenticeship contract, to determine apprentices pay (ILO, 2014).

It can be seen from Appendix Table A.3 that where OECD countries have apprenticeship/trainee pay rates that the rates tend to be separate from their sub-minimum wage rates for young people. As mentioned earlier, two of Australia's Special National Minimum Wage Orders cover employees who are apprentices⁴⁹ and those to whom a training arrangement⁵⁰ applies. For pay purposes, there are two categories of apprentices: i) adult apprentices, who are aged 21 or over when they commence their apprenticeship; and ii) school-based apprentices; individuals who are still going to high school when completing an apprenticeship. Only employees who have a formal training contract with their employer can be paid apprentice pay rates. However, the rates may be different for individuals undertaking an apprenticeship in a sector that is covered by a registered agreement (e.g. enterprise agreements, collective agreements, etc.).⁵¹ The apprenticeship training needs to be registered and recognised by a state or territory training authority, and completed through a Registered Training Organisation. Pay rates for apprentices, and increases in pay during an apprenticeship, depend on i) the duration of the apprenticeship and ii) achievement of a set amount of the total skills or training requirements of the apprenticeship. Usage of these two pay determining mechanisms depends on the sector that the apprenticeship is associated with (e.g. construction, hospitality,

⁴⁸ ILO (2014).

⁴⁹ In Australia, an apprenticeship is defined as a trade qualification (e.g. carpenter, chef, etc.), which can take three to four years to complete.

⁵⁰ In Australia, traineeships allow an individual to study for a certificate qualification that will allow him/her to work in a particular industry or occupation (e.g. office work, childcare, etc). Traineeships can take approximately one to two years to complete.

⁵¹ A registered agreement is a document between an employer and employee covering employment conditions. Such agreements need to be approved and registered with the Fair Work Commission (www.fairwork.gov.au/Dictionary.aspx?TermID=2034).

retail, manufacturing, etc.). Once an individual has completed their apprenticeship, he/she gets paid the tradesperson's pay rate.⁵²

Regarding traineeships in Australia, there are three types of rates: i) full-time, ii) part-time and iii) school-based.⁵³ A full-time trainee is employed under a training contract to work for 38 hours per week. Regarding part-time trainees, it is left to the employer and employee to decide on the duration of the training contract. However, this needs to be checked with the Registered Training Organisation. A school-based traineeship is completed while the individual is still in high school. An individual cannot be paid a traineeship rate because he/she is new to the job or are being trained in a new task. Instead, the employee needs to have a formal training contract with their employer and are signed up with a Registered Training Organisation. An individual on a traineeship is paid for the time that he/she spends training or assessment related to their traineeship, unless the individual is a school-based trainee or a part-time trainee whose training is completely off-the-job.⁵⁴

In Belgium, the sub-minimum wage rates that are in place for young people aged less than 18 (see Appendix Table A.2) apply to student contracts and to those enrolled in work-linked training schemes (ILO, 2014). In relation to apprentices pay, this is calculated as a percentage of the national guaranteed average minimum monthly income (RMMMG), and the rate varies according to the individual's i) age,⁵⁵ ii) level of training, and iii) level of progress in the apprenticeship programme (ILO, 2014).

France has set lower rates of pay for young people employed on a training contract (55-85 per cent of adult rate) and for individuals of any age pursuing vocational training/apprenticeships (25-78 per cent of adult rate) (OECD, 2015a). As in Belgium, apprentices pay in France depends on the individual's age, level of training and stage in the apprenticeship programme (ILO, 2014).

Currently, apprentices are permanently excluded from Germany's statutory minimum wage, as are individuals who undertake a compulsory or voluntary internship lasting up to three months as part of an education or training course (OECD, 2015b).

⁵² www.fairwork.gov.au/pay/minimum-wages/apprentice-and-trainee-pay-rates.

⁵³ The trainee rates for most awards are set out in the National Training Wage Schedule (<http://guides.dss.gov.au/guide-social-security-law/1/1/n/12>).

⁵⁴ www.fairwork.gov.au/pay/minimum-wages/apprentice-and-trainee-pay-rates.

⁵⁵ Currently, apprentices aged under 21 receive 50 per cent of the RMMMG (ILO, 2014).

Greece offers apprenticeships to students aged 16-23 who have completed at least the first grade of Upper Secondary School. These apprenticeships⁵⁶ are provided through 51 Vocational Education Schools (EPAS), under the auspices of the Ministry of Education and the OAED (Manpower Employment Organisation). The duration of the courses is two school years, and trainees are paid 70 per cent of the minimum wage that is determined by the National General Collective Labour Agreements for the duration of the course. The student traineeship is also subsidised by €12 a day, which is paid either directly to the employer or the trainee.⁵⁷

Similar to Australia's National Minimum Wage Order, Ireland's National Minimum Wage Act provides for sub-minimum wage rates for employees over the age of 18 who are undertaking a course of structured training or direct study that is authorised by his/her employer. Specifically, for the first one-third of the employee's training course, he/she is paid 75 per cent of the NMW; for the second one-third the rate is 80 per cent of the NMW; and for the final one-third the rate is 90 per cent of the NMW.⁵⁸ In addition to the training/study course requiring approval by an employer, there are certain other criteria that the course must meet in order for these sub-minimum training rates to apply. These include: i) the objective of the course must be to improve the work performance of the employee; ii) the course must be at least three months duration; iii) the course takes place during normal working hours; iv) a minimum of 10 per cent of the course must be direct study or training in or outside of normal working hours; and v) an assessment and certification procedure must be in place, or written confirmation on completion of the training course.⁵⁹ It is important to note that the European Commission issued a Quality Framework for Traineeships (QFT) in 2014 that sought to ensure a common set of standards were adopted for traineeships governing aspects such as accreditation, health and safety, a learning agreement, etc. As far as we can determine, Ireland has yet to adopt any legislation, or introduce any regulations, to ensure that open market traineeships are compliant with the QFT. The lack of a regulatory framework suggests that, in Ireland, traineeships are likely to be much more loosely defined relative to other EU countries that are QFT compliant. In relation to apprenticeships, as mentioned earlier Ireland's National Minimum Wage Act does not cover this group of workers.

⁵⁶ The aim of this apprenticeship system in Greece is to help students to acquire on-the-job training, in addition to in-class training, so that they can subsequently obtain employment. The on-the-job training takes place in the morning and the classroom training in the afternoon (www.oaed.gr/index.php?lang=en).

⁵⁷ www.oaed.gr/index.php?lang=en.

⁵⁸ Each one-third of the training course must be at least one month in duration and no more than one year. (www.citizensinformation.ie).

⁵⁹ For further details on the qualifying training rates criteria, see www.irishstatutebook.ie/eli/2000/si/99/made/en/print.

In Israel, an apprentice is defined as an individual aged less than 18 who is working in order to gain a trade by guided practical work and attending approved trade lessons.⁶⁰ The apprentice's remuneration cannot be lower than the minimum wage that is fixed by the Apprentices' Wage Committee, but the rate paid will vary according to the apprentice's progress, the minimum rate and the mode of payment of the wage (ILO, 2014).

Luxembourg has separate payment rates for apprentices, which are fixed by law or labour agreements and vary between trades and sectors (Müller, 2000). There are two types of apprenticeships⁶¹ in Luxembourg, one for adolescents (minimum 15 years of age) and one for adults (minimum 18 years of age). Applicants to both must have completed statutory compulsory schooling. For the adult apprenticeship scheme, individuals must no longer be under the initial school system, and they must be affiliated with the Joint Social Security Centre⁶² for at least 12 months and for a minimum of 16 hours per week. The duration of apprenticeship training is normally three years, but some qualifications can be of two or four year duration (Müller, 2000). An apprenticeship contract needs to be drawn up by an employer before an apprenticeship can begin, and the contract needs to be registered with the competent employers' association or the Ministry of Education, Children and Youth. The number of apprentices is limited to the number of people in the sector that are qualified to provide training. Employers are entitled to financial support to cover some of the costs associated with the apprenticeship, while apprentices are entitled to a monetary award on the successful completion of their apprenticeship.⁶³

In addition to a starting-out wage, New Zealand also has a 'Training Minimum Wage'. This wage rate applies to employees aged 20 years and above who are undertaking, as part of their employment contract, recognised industry training (up to 60 credits per year) in order to become qualified.⁶⁴ As indicated in Section 2, those aged 16-19 who need to undertake industry training to become qualified in their profession are covered by New Zealand's starting-out wage.

⁶⁰ This can include an industrial school attached to the apprentice's workplace that is approved by the Commissioner of Apprenticeship.

(www.ilo.org/dyn/travail/travmain.sectionReport1?p_lang=en&p_structure=1&p_year=2009&p_start=1&p_increment=10&p_sc_id=1&p_countries=IL&p_print=Y).

⁶¹ In Luxembourg, an apprenticeship combines theoretical and general training from a technical school, and practical training in a commercial, industrial, agricultural or craft sector, which is supervised by an employer (www.guichet.public.lu/entreprises/en/ressources-humaines/contrat-convention/jeunes-actifs/apprentissage).

⁶² The Joint Social Security Centre (CCSS) registers insured persons, and establishes, collects and recovers contributions, and distributes the contributions amongst different institutions. It also manages the computerisation, collection and processing of data on behalf of different government institutions in Luxembourg (the Social Security, the National Supplementary Benefits Fund, the National Employment Administration, etc.).

⁶³ www.guichet.public.lu/entreprises/en/ressources-humaines/contrat-convention/jeunes-actifs/apprentissage.

⁶⁴ <http://employment.govt.nz/er/pay/minimumwage>.

In Portugal, apprentices receive 80 per cent of the NMW. However, this different wage rate only applies for a period of 12 months, including the time spent training with the employer, and is reduced to six months if the apprentice has already undertaken vocational training or obtained an occupational qualification related to the job. After this, apprentices are entitled to remuneration equal to at least the NMW (ILO, 2014).

In the UK, there is a separate sub-minimum wage rate for apprentices aged 16-18 and those aged 19 and above who are in their first year of training. At present, this rate is £3.30 per hour. All other apprentices are entitled to the minimum wage for their age.⁶⁵

1.5 EVIDENCE ON THE ECONOMIC IMPACT OF YOUTH MINIMUM WAGE RATES

For decades, there has been considerable debate⁶⁶ in the literature on the use of minimum wages as a policy tool for addressing inequality and poverty; particularly in terms of its impact on employment levels, and especially among more vulnerable groups (i.e. low-paid workers, such as females, migrants and young people). The majority of the recent research for both developed and emerging economies is indicating that moderate increases in minimum wage rates have no significant negative employment effects, or that the effects – either positive or negative⁶⁷ – are very small (e.g. Kennan, 1995; Dolado et al., 1996; Galarneau and Fecteau, 2014; ILO, 2015; OECD, 2015b; Conlon et al., 2015; and Broecke et al., forthcoming).

Results from studies on the effects of minimum wage policies on young people are similar to those that have been found for all workers i.e. insignificant, or very small if positive or negative (e.g. Pereira, 2003;⁶⁸ Hyslop and Stillman, 2011;⁶⁹ Conlon et al., 2015; and Croucher and White, 2011). Some research has found negative effects (e.g. Neumark and Wascher, 1995;⁷⁰ Currie and Fallick, 1996;⁷¹ Majchrowska and Żółkiewski, 2012;⁷² and Fidrmuc and Tena, 2013),⁷³ some of which indicates that the negative effects are slightly larger than that for the full

⁶⁵ There were no NMW rates for apprentices prior to 2010 (www.gov.uk/national-minimum-wage-rates).

⁶⁶ For some of the most recent discussion, see Dube et al. (2010); Allegretto et al. (2011); Allegretto et al. (2013); Neumark et al. (2014a and 2014b); and Allegretto et al. (2015).

⁶⁷ Some of the earlier research that found negative employment effects include Brown et al. (1982); Neumark et al. (2004); and Neumark and Wascher (2008), while Card and Kruger (1994 and 1995) found positive effects.

⁶⁸ Results relate to the impact of minimum wage rate reforms on young people in Portugal.

⁶⁹ Results relate to reforms introduced in New Zealand in 2008.

⁷⁰ Results relate to the US, and specifically the spill-over effects of minimum wages on young peoples' educational enrolment and economic inactivity.

⁷¹ Results relate to the US.

⁷² Results relate to Poland.

⁷³ Results relate to the UK.

population (e.g. Dolado et al., 1996; Dolton and Bondibene, 2012;⁷⁴ Neumark et al., 2014a and 2014b; and OECD, 2015b). Other studies have found that the effect of introducing or increasing the minimum wage rate on young people's employment is positive (e.g. Portugal and Cardoso, 2006;⁷⁵ Gulliano, 2013;⁷⁶ Dickens et al., 2014).⁷⁷ In general, as with the overall results, the effects of minimum wage policies on young peoples' employment or continued education decisions, whether positive or negative, have been found to be small and weak, and sometimes insignificant (e.g. Hyslop and Stillman, 2007;⁷⁸ De Coulon et al., 2010;⁷⁹ Crawford et al., 2011;⁸⁰ Olssen, 2011;⁸¹ Hyslop and Stillman, 2011; and Croucher and White, 2011).

The OECD (2015b) points out that an increase in the minimum wage might not have a direct impact on existing employment, and, hence, the reason for the small or insignificant employment results, but that an increase in the rate may have indirect effects, such as reductions in non-wage benefits, training and hours worked, more precarious employment contracts, and/or slower hiring and, consequently, employment growth.⁸²

Aside from this, other factors that may influence the empirical results that have been derived on the impact of the minimum wage on employment include: i) the measurement period used (short-run versus long-run effects); ii) the timing of the minimum wage adjustment (boom versus recession period); iii) institutional factors (e.g. trade union power, collective bargaining agreements, etc.); iv) the

⁷⁴ Dolton and Bondibene (2012) examined the effects of minimum wages on both young and adult individuals using data for 33 OECD countries between 1971 and 2009.

⁷⁵ Results relate to Portugal, with an increase in the youth minimum wage rate leading to a reduction in both job separations and job accessions among young people, with the reduction in separations outweighing the reduction in accessions. Similar work has been undertaken in Canada by Brochu and Green (2013).

⁷⁶ Results relate to more affluent teenagers in the US.

⁷⁷ Results relate to low-skilled workers in the UK.

⁷⁸ Results relate to the impact of reforms made to youth minimum wages rates in New Zealand in the early 2000s. No evidence that the reforms had any impact on youth employment or hours worked immediately after the reforms, but there was some weak evidence of employment losses a couple of years later. Hyslop and Stillman (2007) also examined the impact of the reforms on educational enrolment and unemployment and inactivity. For educational enrolment, they found a slight decline for those aged 16-17 years over the study period, but enrolments were stable or slightly increasing for those aged 18-19 and 20- to 25-year-olds. Overall, Hyslop and Stillman (2007) conclude that these changes, and those associated with unemployment and inactivity, were too small to conclude that the minimum age had any significant impact on youths.

⁷⁹ De Coulon et al. (2010) examined the impact of the UK's youth minimum wage rates on young peoples' decision to remain in education and found that the rates had no effect on this decision. Instead, ability and socio-economic background characteristics were more important determinants of this decision, along with local labour market demand, which was captured by the unemployment rate in the region.

⁸⁰ As with De Coulon et al. (2010); Crawford et al. (2011) also found that the UK youth minimum wage rates did not draw young people from education into the labour market. They did find, though, that, relative to high wage areas, the youth minimum wage rate for those aged 16-17 in low wage areas had a positive impact on the probability of working among full-time students i.e. it increased part-time work among full-time students.

⁸¹ Olssen (2011) examined the impact of youth minimum wage rates in Australia and found, overall, that there were no negative employment effects from such rates.

⁸² See also Broecke et al. (forthcoming) and Gunderson (2007).

country setting (developed versus emerging economies); and v) data issues (e.g. cross-sectional versus panel data, and methodology). Nevertheless, even when such factors are taken into account in a meta-analysis framework, the results, including for young people, indicate that the employment effects of minimum wage changes continue to be small and/or insignificant (see Table 1).

The OECD (2015b) believe that using minimum wages as a policy tool for addressing poverty is quite a blunt instrument because many poor families have no one in employment, and also many people on the minimum wage live in households with above average income. Thus, the OECD (2015b) argue that for minimum wages to be effective in tackling poverty that this policy instrument needs to be combined with other measures, particularly tax and benefit policies.⁸³

The OECD (2015b) also recommends that minimum wages should be allowed to vary by different groups (e.g. by age) in order to reflect differences in productivity or employment barriers, and/or by region, to take account of differences in economic conditions. Such differentiation, it is believed, will also minimise any adverse effects minimum wage policies might have, particularly on vulnerable groups like young people (see, for example, Croucher and White, 2011; and ICF GHK, 2014). The ILO (2014), on the other hand, espouse the value of equal pay for work of equal value and, therefore, advise governments to monitor and re-examine on a regular basis any of their sub-minimum wage rates.⁸⁴

⁸³ Some research has found that high collective bargaining coverage, in combination with a statutory NMW, can play a role in reducing earnings inequalities. This is specifically the case for countries with sectoral-level minimum wage rates (see Garner et al., 2015).

⁸⁴ This includes not just young people, but also apprentices, trainees, and occupation-specific and regional rates to name but a few.

TABLE 1 Meta-Analysis Studies of the Effects of Minimum Wages on Employment

Study	Year	No. Studies	Country Coverage	Employment Effect	Youth Employment Effect
Doucoulgiagos and Stanley	2009	64	United States	Little or no impact	Negative, but small
Boockmann	2010	55	15 Industrial Countries	Negative, but varies across countries	
Nataraj et al.	2014	17	15 Low-income Countries	Ambiguous	
Leonard, Stanley and Doucoulgiagos	2014	16	United Kingdom	No impact	
Belman and Wolfson	2014	23	Mainly United States	Small negative impact	
Chletsos and Giotis	2015	77	18 Developed and Developing Countries	No impact	More negative, but not always significant
Broecke, Forti and Vandeweyer	forthcoming	74	10 Major Emerging Economies	Little or not impact	More negative, but still very small

Source: OECD Employment Outlook 2015.

1.6 EARLY SCHOOL LEAVING IN IRELAND

A relevant factor related to the debate around sub-minimum rates is the extent to which variations in the sub-minimum wage rates will impact the extent of early school leaving. The low incidence of young people in receipt of the youth rate in Ireland would suggest that such direct impacts, at least in 2009, are likely to have been small. In general, the research suggests that local wage levels have relatively little impact on the decisions of young people whether or not to stay in school, with academic ability and socio-economic background much more important factors in this respect (see, for example, De Coulon et al., 2010; and Crawford et al., 2011). In addition to ability and socio-economic class, Meschi et al. (2010) report that higher unemployment rates tend to keep young males in education.

To get a sense of the level and pattern of early school leaving in Ireland, we use the Quarterly National Household Survey (QHNS) to identify in 2003, 2005, 2007, 2009, 2011, 2013 and 2015 the economic status of 15- to 17-year-olds who attained a Lower Secondary qualification in the previous year. Table 2 plots these results, with the ILO economic status measure (employment, unemployment and inactivity) used for the analysis. It can be seen from this table that there is a high degree of variability. The first two rows of data measure the proportion of 15- to 17-year-olds who entered the labour market prior to completing the Leaving Certificate qualification in each year (i.e. early school leavers). These data show that the proportions of young people in the labour market ranged from between 19.2 and 17.6 per cent during the boom period of 2003 to 2007, before falling to a low of 5.8 per cent at the depth of the recession in 2011. By 2015, 7.7 per cent

of young people were in the labour market, a rate of less than half the 2003 to 2007 average. Based on analyses of school-leavers' survey data,⁸⁵ most early school leavers are from unemployed, non-manual and manual socio-economic backgrounds.

TABLE 2 Economic Status of Young People¹ who attained a Lower Secondary Qualification the Previous Year (%)

	2003 (%)	2005 (%)	2007 (%)	2009 (%)	2011 (%)	2013 (%)	2015 (%)
ILO Economic Status:							
Employment	16.6	15.7	14.3	7.3	2.1	5.5	5.4
Unemployment	2.6	1.9	3.3	4.2	3.7	4.3	2.3
Inactive:	80.8	82.4	82.4	88.5	94.2	90.3	92.3
<i>Of inactive, percent in formal education:</i> ²	93.4	92.7	92.8	94.4	94.2	95.9	94.1
Total:	50,607	60,787	55,367	66,756	56,880	53,162	55,979

Source: OECD Employment Outlook 2015.

Note: ¹ Individuals aged 15-17.

² Participation in formal education in the last four weeks at the time of the survey.

Table 2 confirms that well over 90 per cent of 15- to 17-year-olds recorded as inactive in any one year remain in education.⁸⁶ The variation in early school leaving rates in this table is suggestive of a cyclical movement in the Irish data. However, it is unclear to what extent the pattern relates to changes in the general levels of earnings, changes in minimum wages, variations in the unemployment rate, some combination of all three, or some other factors. Those young people not in employment, education or training are formally referred to as NEETs. Using 2012 and 2013 QNHS data, research by the Department of Social Protection (2015) found that when students⁸⁷ and the unemployed are excluded from the NEETs definition that almost 60 per cent of NEET individuals are carers – and mainly women aged 22-24 who describe themselves as looking after children, while a further 20 per cent are disabled.

⁸⁵ See Byrne et al. (2008).

⁸⁶ For example in 2003, 80.8 per cent of the 50,607 young people were inactive. Of these, 93.4 per cent were in formal education.

⁸⁷ Individuals who were classified as either inactive or unemployed on the standard international ILO criteria, but who self-identified as 'students' on the 'main status' question in the QNHS (i.e. the 'principal economic status' question).

Chapter 2

Primary Data Analysis on Minimum Wages in Ireland

With respect to Irish data, the cessation of earnings surveys, such as the National Employment Survey (NES), by the Central Statistics Office (CSO) following the economic downturn has resulted in a lack of current data with which the incidence of the minimum wage in Ireland can be measured. While earnings information is available in the EU-Survey on Income and Living Conditions (EU-SILC) for 2014, it is perhaps more reliable to assess the incidence of the minimum wage using a special module on the issue contained within the October 2009 NES. The 2009 data is particularly useful as both employers and employees are asked to provide information regarding the adult, youth and training NMW rates. Specifically, the 2009 NES asked employee respondents if they were currently in receipt of any of the NMW rates in force at that time,⁸⁸ while employers were asked to indicate the total number of payroll employees on each of the respective rates. Therefore, the 2009 NES allows us to estimate the incidence of minimum wage employment on the basis of employee⁸⁹ and employer⁹⁰ responses, as well as a measure based directly on a derived hourly pay variable.⁹¹

It is clear from Table 3 that the incidence of minimum wage employment varies depending on the approach taken to calculate the rates. While there is a good deal of comparability between the rates estimated from the employee and employer samples using the special module questions, the estimate of those on the adult NMW using the derived hourly wage variable is somewhat implausible when compared to the other two measures. On the grounds that the earnings information is likely to be taken from payroll data, it is probably reasonable to assume that the observed variation relates to uncertainty, or inaccuracy, around the number of hours worked in the reference period (excluding overtime). The evidence from Table 3 also suggests that the incidence of the NMW is more

⁸⁸ An adult rate of €8.65, a youth rate of €6.06 or a training rate of between €6.47 and €7.79.

⁸⁹ The employee estimate is derived by weighting employee responses by the relevant employee weight that is provided in the 2009 NES micro dataset (i.e. variable called 'ee_wt').

⁹⁰ The employer estimate is generated by reducing the NES to an employer-level dataset (by retaining one observation per firm) and dividing the total number of minimum wage workers in each category across all firms by total employment across all firms. As the NES dataset is designed to be representative of the structure of employing organisations in Ireland, these calculations are un-weighted on the grounds that the firm-level dataset will be nationally representative.

⁹¹ The hourly pay variable is derived by grossing weekly basic pay and basic hours to annual figures, dividing each by 52 to generate weekly averages and then dividing weekly pay by weekly hours. NMW workers were defined as those earning between €8.00 and €9.00 per hour. Those on training rates were defined as earning between €6.50 and €8.00 per hour, while those on youth rates were defined in terms of earnings below €6.50 per hour. The incidences were again estimated by applying the employee weight that is in the 2009 NES micro dataset (i.e. variable 'ee_wt').

accurately measured through questionnaire modules as opposed to estimates based on derived hourly wage variables using datasets such as the NES or EU-SILC.

TABLE 3 Estimates of the NMW Incidence 2009

	Wage Data	Employee	Employer
NMW Incidence	1.2	6.8	5.3
Youth MW Incidence	0.2	0.1	0.1
Trainee MW Incidence	0.5	0.3	0.2
Total	1.9	7.2	5.6

Source: 2009 National Employment Survey. See Data Appendix A for further details

While the incidence of youth and trainee minimum wage earners using both employee and employer responses are very similar, there is some discrepancy with respect to the adult incidence. However, without further research it is not possible to draw conclusions with respect to the source of the variation, or the most reliable estimate. Generally, the data suggests that the incidence of adult minimum wage employment ranged between 5.3 and 6.8 per cent in 2009.

It is clear from all of the estimates that a very small percentage of employees were impacted by either the training or youth rates of the NMW in 2009. In fact, the data revealed that less than 6 per cent of employees aged below 18 were in receipt of the youth rates in 2009. In contrast, 20 per cent of employees aged below 18 reported that they earned the adult NMW rate.

Table 4 shows the distribution of the NMW by worker characteristics based on responses to the employee questionnaire. In terms of gender, 7.2 per cent of female workers reported themselves to be in receipt of the NMW compared to 6.3 per cent of males. At 17.4 per cent, the incidence of the NMW was highest among 15- to 24-year-olds and lowest among employees in the 40-59 age brackets. Finally, we can see from Table 4 that the NMW incidence falls dramatically by education level, from 15.3 per cent for those without a formal qualification to 3.4 per cent for graduates.

TABLE 4 Incidence of NMW by Selected Worker Characteristics

	% on NMW
Gender:	
Male	6.3
Female	7.2
Age:	
15-24	17.4
25-29	8.0
30-39	5.3
40-49	4.8
50-59	4.8
60plus	7.0
Educational Attainment:	
No qualifications	15.3
Upper secondary	8.9
Post-secondary	8.7
Third-level non-degree	7.1
Third-level degree	3.4

Source: Derived using microdata from the 2009 National Employment Survey, Central Statistics Office.

Table 5 provides a breakdown of how the NMW incidence varies across the most disadvantaged combination of attributes based on the descriptive statistics from the 2009 NES, i.e. being female, aged 15 to 24 and holding no formal educational qualifications. The table indicates that 17.6 per cent of females aged 15-24 earn the NMW, with this category of worker accounting for 6.5 per cent of all employees (Case 2). Over a quarter of females aged 15-24 without formal qualifications were in receipt of the NMW. However, at 0.1 per cent, the employment share of this grouping was very small (Case 3). Table 5 indicates that while the NMW incidence rises sharply for various combinations of attributes, the relative employment share of the grouping in question falls sharply as additional attributes are considered.

TABLE 5 Percentage of Employees in Receipt of the NMW by Worker Profile

	Case 1	Case 2	Case 3
Female	7.2		
15-24		17.6	
No Qualifications			27.0
% Employees	51.0	6.5	0.1

Source: Derived using microdata from the 2009 National Employment Survey, Central Statistics Office.

However, such descriptive analysis, such as that undertaken for Tables 3-5, can be inaccurate as it cannot control for the possibility that various combinations of attributes are typically held simultaneously by an individual. In order to account for this, we adopt a multivariate framework. The NES data allows us to identify some of the principal characteristics of both minimum wage workers and employers within a multivariate framework. To achieve this we estimate the following models:

$$MW_{ij} = \alpha + \beta_1 X_{ij} + \beta_2 F_j + \varepsilon_{ij} \quad (1.1)$$

$$MW_j = \alpha + \beta_1 X_j + \beta_2 F_j + \varepsilon_j \quad (1.2)$$

In Equation 1.1, MW_{ij} is a binary variable which equals one if worker i in firm j is on the minimum wage and zero otherwise; X_{ij} denotes a set of individual characteristics of worker i in firm j ; while F_j denotes a set of firm-level attributes (see Data Appendix B for details). In Equation 1.2 MW_j is a binary variable which equals one if firm j has at least one employee on the minimum wage and zero otherwise.⁹² X_j denotes the average percentage of workers within firm j holding particular attributes; while F_j denotes a set of firm-level attributes (see Data Appendix C for details).

Table A.4 in the appendix reports the results from the employee analysis (Equation 1.1). What is immediately obvious is that, once we control for the fact that individuals hold different combinations of attributes, the relative importance of particular characteristics is quite small. For instance, holding all other factors constant, being female raises the probability that a worker will be in receipt of the NMW by just 0.2 percentage points, which is considerably below the 0.9 (7.2-6.3) difference suggested by the raw data in Table 3. With respect to age, relative to employees in the 40-49 age grouping, being aged 15-24 raises the probability of earning the NMW by 0.7 percentage points as compared to a difference of 12.6 percentage points (17.4-4.8) in the raw data. Finally, regarding education, holding a degree over no qualifications reduces the probability of being in receipt of the NMW by just 0.3 percentage points, which is again much lower than what is suggested by Table 3.

In addition to gender, age and education, other factors that were found to increase the likelihood that an employee would receive the NMW include lower employment tenure, working part-time, being a migrant, having a non-permanent contract and not belonging to either a trade union or professional

⁹² According to the NES data, 29 percent of employers in 2009 hired at least one worker on the NMW.

body. However, the impact of these variables on the predicted probability of receiving the NMW was also small. In terms of industry, being employed in the Transport and storage sector raised the probability of being in receipt of the NMW by 0.3 percentage points relative to the reference category of Construction sector employees. In summary, while possessing certain personal characteristics, or being employed in particular sectors, do impact an individual's likelihood of being in receipt of the NMW, such factors only increase the level of risk by very small amounts.

The model estimating the probability that an employer will hire workers at the NMW (Equation 1.2) is reported in Appendix Table A.5. This model does not measure the intensity of minimum wage employment within the firm, merely that the firm pays any workers the NMW. The variables in this model relate to the structure of the organisation, typically measured in terms of either (a) the percentage of workers holding particular attributes or (b) characteristics of the firms themselves, such as size, sector and whether they hire workers at various qualification levels (see Data Appendix C for details). The results indicate that firms who hire any workers with no formal qualifications are 8.6 percentage points more likely to pay the NMW, while employing staff with sub-degree or degree qualifications lowers the likelihood that a firm will pay the NMW by 3.9 and 3.2 percentage points respectively. A number of other factors related to the structure of the workforce, such as the percentages of employees who are female, part-time, shift workers, migrants, non-union members, on temporary contracts, etc., are statistically significant; however, their marginal impacts are relatively small. For example a 1 percentage point increase in the percentage share of part-time workers increases the probability that the firm will pay the NMW by just 0.1 percentage points. The age profile of the workforce is somewhat more important, with a one year increase in the average age of the workforce reducing the probability that the firm will pay the NMW by 0.7 percentage points. The sectoral location of firms appears more relevant with employers in Information and communication, Wholesale and retail and Education sectors between 17 and 14 percentage points less likely to employ anyone on the NMW relative to firms located in the Construction sector (reference category). Thus, in summary, while employing workers without formal qualification raises the probability that a firm will pay the NMW by around 10 percentage points, other organisational characteristics have a much lower impact. Sectoral effects are much more important in the context of firms, with companies operating in the Wholesale and retail, Information and communication and Education sectors approximately 15 percentage points less likely to pay the NMW relative to firms in Construction.

Chapter 3

Summary

This report assesses the extent to which minimum wages are adopted internationally and, in instances where they exist, the degree to which separate rates exist for young people and the methods by which they are constructed. The analysis also summarises the rationales for the existence of sub-minimum rates and the international evidence relating to their economic effects. Finally, some preliminary assessments relating to minimum and sub-minimum wage rates for Ireland are presented.

We find that over two-thirds of OECD countries have statutory minimum wages and, of these, just under two-thirds have special rates for young people. The evidence demonstrates that, in terms of their construction and design, youth rates are predominately expressed as some proportion of the adult minimum wage rate. While most sub-minimum wage rates for young people are age-based, there are a few exceptions, such as France where the young person's experience levels are also taken into account. Where OECD countries have apprenticeship/trainee pay rates, the rates tend to be separate from their sub-minimum wage rates for young people. In addition, the rates are not restricted to youths.

In relation to the economic effects of sub-minimum wage rates, as with the international literature on minimum wages generally, the effects of the policy on young peoples' employment or continued education decisions, whether positive or negative, have been found to be small and weak, and sometimes insignificant.

Within the literature, a relevant factor related to the debate around sub-minimum rates is the extent to which variations in the sub-minimum wage rates will impact the extent of early school leaving. We found substantial variation in early school leaving rates between 2003 and 2015, which was suggestive of a cyclical movement in the Irish data. However, it is unclear to what extent the pattern relates to changes in the general levels of earnings, changes in minimum wages, variations in the unemployment rate, some combination of all three, or some other factors.

Evidence from the Irish data from 2009 suggests that the incidence of the adult minimum wage ranged between 5.3 and 6.8 per cent in 2009. It was also clear

from all of the data that a very small percentage, typically less than 0.5 per cent, of employees were impacted by either the training or youth rates of the NMW in 2009. Furthermore, the data revealed that less than 6 per cent of employees aged below 18 were in receipt of the youth rates.

Finally, we utilised the data at hand to get some preliminary indicators of the key characteristics of minimum wage workers and employers in Ireland during 2009. We found that while possessing certain personal characteristics, or being employed in particular sectors, do impact an individual's likelihood of being in receipt of the NMW, such factors only increase the level of risk by very small amounts. With respect to the characteristics of NMW employers, the research shows that while employing workers without formal qualification raises the probability that a firm will pay the NMW by around 10 percentage points, other organisational characteristics have a much lower impact. Sectoral effects are much more important in the context of firms, with companies operating in the Wholesale and retail, Information and communication and Education sectors approximately 15 percent less likely to pay the NMW relative to firms in Construction.

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Appendix Tables

TABLE A.1 Countries with Subminimum Wage Rates for Young People

Country	Currency	Year of Introduction	Setting Mechanism	Adult MW	Adult MW Rate	Youth MW	Youth Definition	Format	Adult Rate Linkage	Note	Source
OECD Countries:											
Australia	AUD	1907, 1997 in its current form	The Fair Work Commission's Minimum Wage Panel	Yes	\$17.29 per hour (2015)	Yes	15 - 20	Age-based	Yes	Australia's NMW Orders cover employees not covered by an enterprise agreement or a modern award (i.e. an award that covers a whole industry or occupation). In addition to the Adult NMW, The Fair Work Commission in Australia has five separate Special NMW orders. One of these rates relates to youths.	Fair Work Commission (https://www.fwc.gov.au/awards-and-agreements/minimum-wages-conditions/national-minimum-wage-orders)
Belgium	EUR	1975	National Labour Council - binding Collective Bargaining Agreements (CBAs)	Yes	€1,501.82 per month; €1,541,67 per month if aged 19.5 years and 6 months employment experience; €1,559.38 per month if aged 20 and 12 months employment experience (2015)	Yes (See Note)	<18	Age-based	Yes	Since the 1 January 2015, there has been no difference in the youth and adult NM wage rates for those aged 18 to 21 in Belgium, apart for certain contract types (see Appendix Table A2). For those aged less than 18, the subminimum rates still apply.	FPS Employment, Labour and Social Dialogue (http://www.emploi.belgique.be/defaultTab.aspx?id=39004#)

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TABLE A.1 Contd.

Country	Currency	Year of Introduction	Setting Mechanism	Adult MW	Adult MW Rate	Youth MW	Youth Definition	Format	Adult Rate Linkage	Note	Source
OECD Countries:											
Chile	CLP	1934, 1973 in its current form	Minimum wages are set by the government, and are based on the recommendations of a Technical Committee consisting of academics, labour representatives and government officials	Yes	225,000 per month (2014)	Yes	15-17	Age-based	Yes	The youth minimum wage rate was introduced in 1989.	Broecke, S., Forti A. And Vandeweyer, M. (forthcoming). "The Effects of Minimum Wages on Employment in Emerging Economies: A Literature Review", OECD Social, Employment and Migration Working Papers.
France	EUR	1950, 1970 in its current form	The legal minimum wage is set annually after consultation between the Government and the social partners. A commission of independent experts provide official advice in this process.	Yes	€1,458 per month (2015)	Yes	15-18	Age / Experience based	Yes	Individuals aged less than 18 with 6 months professional experience in their profession are paid the adult NMW.	Eurofound (http://www.eurofound.europa.eu/observatories/eurwork/articles/working-conditions/statutory-minimum-wages-in-2015-pay-q4-2014-eurwork-topical-update)

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TABLE A.1 Contd.

Country	Currency	Year of Introduction	Setting Mechanism	Adult MW	Adult MW Rate	Youth MW	Youth Definition	Format	Adult Rate Linkage	Note	Source
OECD Countries:											
Germany	EUR	2015	From Jan 2017, the national minimum wage in Germany will be set by a Commission composed of a president, three employer and three employee representatives, and two independent experts with no voting rights	Yes	€8.50 per hour (2015)	See Note	-	-	-	Those aged less than 18 in Germany are exempt from the national minimum wage. There are some other temporary exemptions in place up until the end of 2016. Specifically, gross hourly earnings of less than €8.50 are permitted in i) the agricultural sector, ii) meat-processing industry, iii) hair-dressing, iv) temporary work (East Germany and Berlin), and v) building structure cleaning (East Germany).	Eurofound (http://www.eurofound.europa.eu/observatories/eurwork/articles/working-conditions/statutory-minimum-wages-in-2015-pay-q4-2014-eurwork-topical-update)
Greece	EUR	1953; 2012 in its current form	Set by the government after consultation with the social partners and independent experts	Yes	€586.08 per month; €26.18 per day (2014)	Yes	<25	Age-based	Yes	The per day rate applies to skilled workers. Subminimum rates for young people were introduced in Greece as part of their first International Monetary Fund economic adjustment programme.	ILO (2014)
Ireland	EUR	2000	Set by the government following recommendations from the LPC, which was established in 2015	Yes	€9.15 per hour (2016)	Yes	<18	Age / Employment Duration based	Yes	The NMW applies to an experienced adult employee, who is defined as an employee who has employment of any kind in any two years over the age of 18.	Low Pay Commission (http://www.lowpaycommission.ie/Rates/)

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TABLE A.1 Contd.

Country	Currency	Year of Introduction	Setting Mechanism	Adult MW	Adult MW Rate	Youth MW	Youth Definition	Format	Adult Rate Linkage	Note	Source
OECD Countries:											
Israel	ILS	1987	Government legislation	Yes	25.00 per hour (2015)	Yes	16-18	Age-based	Yes		National Insurance Institute of Israel (http://www.btl.gov.il/English%20Homepage/Mediniyut/GeneralInformation/Pages/MinimumWage.aspx)
Luxembourg	EUR	1944; 1973 in its current form	Government legislation	Yes	€1,922.96 per month (2016)	Yes	15-18	Age-based	Yes	Luxembourg's NMW is known as the Social Minimum Wage (SMW). The standard adult rate applies to unskilled workers, whereas the SMW for skilled workers is an additional 20% of the SMW (€2,307.56)	Government of the Grand Duchy of Luxembourg (http://www.guichet.public.lu/entreprises/en/ressources-humaines/remuneration/paiement-remunerations/salaire/)
Netherlands	EUR	1968	Government legislation	Yes	€1,507.80 per month (2015)	Yes	15-22	Age-based	Yes	The Government adjusts the NMW on the 1 January and 1 July every year. The changes are made in line with changes in average collectively agreed wages in the country.	Government.nl (https://www.government.nl/topics/minimum-wage/contents/amount-of-the-minimum-wage)
New Zealand	NZD	1945, 1983 in its current form	Government legislation	Yes	\$14.75 per hour (2016)	Starting-out Wage'	16-19	Age/Employment Duration based	Yes	Those aged 16-19 are covered by a 'starting-out wage' as opposed to a sub-minimum wage rate.	Ministry of Business, Innovation and Employment (http://employment.govt.nz/er/pay/minimumwage/)

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TABLE A.1 Contd.

Country	Currency	Year of Introduction	Setting Mechanism	Adult MW	Adult MW Rate	Youth MW	Youth Definition	Format	Adult Rate Linkage	Note	Source
OECD Countries:											
Portugal	EUR	1974	Set by the government after consulting with the Permanent Committee for Social Dialogue	Yes	€505 per month (2015)	Yes	<18	Age-based	Yes		Eurofound (http://www.eurofound.europa.eu/observatories/eurwork/articles/working-conditions/statutory-minimum-wages-in-2015-pay-q4-2014-eurwork-topical-update)
United Kingdom	GBP	1999	Set by the government following recommendations from the LPC	Yes	£6.70 per hour (2015)	Yes	15-20	Age-based	Yes		UK.gov (https://www.gov.uk/government/organisations/low-pay-commission)
United States	USD	1938	Government legislation	Yes	\$7.25 per hour (2009)	Yes	<20	Age-based	Yes	Many states also have minimum wage laws. In such states, employees are entitled to the higher of the two minimum wages.	United States Department of Labor (http://www.dol.gov/general/topic/wages/minimumwage)
Other Countries:											
Albania	ALL	2004	Set by the Council of Ministers after consultations with the National Labour Council	Yes	22,000 per month (2013)	See Note	-	-	-	The Council of Ministers have the authority to establish a reduced minimum wage rate for young people, but this provision has not been implemented (ILO, 2014).	The Federation of International Employers (http://www.fedee.com/pay-job-evaluation/minimum-wage-rates/)

Contd.

TABLE A.1 Contd.

Country	Currency	Year of Introduction	Setting Mechanism	Adult MW	Adult MW Rate	Youth MW	Youth Definition	Format	Adult Rate Linkage	Note	Source
Other Countries											
Chad	CFA	1978	Fixed by agreement between representative employers' and workers' organisations	Yes	59,995 per month (2014)	Yes	<18	Age-based	Yes		Social Security Administration (https://www.ssa.gov/policy/docs/progdesc/ssptw/2014-2015/africa/chad.html)
Costa Rica	-	1943	Fixed by the National Wage Council, a tripartite body	Yes	Minimum wage rates vary by sector, occupation and skill level	Yes	<18	Age / Employment Duration based	Yes	Minimum wages are adjusted every 6 months even though the legislation provides for an annual adjustment: the wage rate can be adjusted at the request of 5 employers or 15 workers in the same sector (ILO, 2014).	OECD (2015b)
Latvia	EUR	1991	Set by the government following social partner recommendations	Yes	€370 per month (2016)	See Note	<18	-	-	Due to regulation around the number of hours that a young person can work, those aged less than 18 get paid a higher hourly NMW.	LM.gov (http://www.lm.gov.lv/text/2014) and OECD (2015a)
Malta	EUR	1993	Set by the government following a recommendation from the Employment Relations Board	Yes	€168.01 per week (2016)	Yes	<18	Age-based	Yes	This NMW rate applies to full-time employees only. The NMW for part-time employees is calculated pro rata at the same hourly rate of a comparable full-time employee. In addition to having a basic NMW that applies across all economic sectors, there are also 31 sector specific minimum wages in Malta, which are set by Wage Regulation Orders (WROs).	dier.gov.mt (https://dier.gov.mt/en/Employment-Conditions/Wages/Pages/National-Minimum-Wage.aspx)

Contd.

TABLE A.1 Contd.

Country	Currency	Year of Introduction	Setting Mechanism	Adult MW	Adult MW Rate	Youth MW	Youth Definition	Format	Adult Rate Linkage	Note	Source
Other Countries											
Slovak Republic	EUR	1991	Set by the government following consultation with the social partners	Yes	€405 per month (2016)	Yes	<22	Age-based	Yes		The Federation of International Employers (http://www.fedee.com/member-news/national-minimum-wage-increase-2016/)
Turkey	TRY	1969 - some provinces 1974 - whole country	Set by Minimum Wage Fixing Committee, which consists of government, employer and employee representatives	Yes	1, 647 per month (2016)	Yes	<16	Age-based	Yes		Eurostat (http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do)

Source: Compiled by the Authors.

TABLE A.2 Detailed Information for Countries with Youth Minimum Wage Rates

Country	Youth MW Rate(s)	Source
OECD Countries:		
Australia	15: 36.8% 16: 47.3% 17: 57.8% 18: 68.3% 19: 82.5% 20: 97.7%	Fair Work Commission (www.fwc.gov.au/awards-and-agreements/minimum-wages-conditions/national-minimum-wage-orders)
Belgium	Prior to the abolition of the youth MW rate in Belgium for those aged 18-21, the rate was fixed in 1991 as a percentage of the NW for workers aged 21 and over, which is known as the guaranteed average monthly minimum income (RMMMIG). Specifically: 15-16: 70% (€1051.27 per month); 17: 76% (€1141.38 per month); 18: 82% (€1231.49 per month); 19: 88% (€1321.60 per month); 20: 94% (€1411.71 per month). As indicated in the report, the sub-minimum rates still apply to those aged less than 18, and to some other contract types. Higher NMW rates apply to employees aged at least 19.5 years with at least six months of employment experience, and to those aged 20 years and 12 months employment experience.	Rate values as of 1 January 2015. (www.emploi.belgique.be/defaultTab.aspx?id=39004#)
Canada	In Ontario, those aged less than 18 that work up to 28 hours per week during term-time, or who are employed during school holidays, earn 94 per cent of that State's NMW.	ILO (2014)
Chile	15-17: approximately 75 per cent (167,968 per month)	2014 rate (Broecke, S., A. Forti and M. Vandeweyer (forthcoming), 'The Effects of Minimum Wages on Employment in Emerging Economies: A Literature Review', OECD Social, Employment and Migration Working Papers).
Czech Republic	Prior to the abolition of the youth MW rate in the Czech Republic, there was two differential levels for young people aged under 22, which were a percentage of the adult NM rate: 15-17: 80 per cent and 18-21: 90 per cent.	OECD (2014)
France	< 17: 80 per cent; 17-18: 90 per cent These sub-minimum rates do not apply to individuals aged less than 18 who have six months professional experience in their profession. In France, the NMW is known as the inter-occupational minimum growth wage (SMIC).	ILO (2014)
Germany	Those aged less than 18 in Germany are exempt from minimum wage legislation.	OECD (2015)
Greece	< 25: 77 per cent (€510.95 per month/€22.83 per day).	

Contd.

TABLE A.2 Continued

Country	Youth MW Rate(s)	Source
OECD Countries:		
Ireland	< 18: 70 per cent (€6.41 per hour); First year from date of first employment after reaching the age of 18: 80 per cent (€7.32 per hour); Second year from date of first employment after reaching the age of 18: 90 per cent (€8.24 per hour).	Low Pay Commission (www.lowpaycommission.ie/Rates/)
Israel	16: 70 per cent 17: 75 per cent 18: 83 per cent	ILO (2014)
Luxembourg	15-17: 75 per cent (€1,442.22 per month); 17-18: 80 per cent (€1,538.37 per month).	January 2016 rates. Government of the Grand Duchy of Luxembourg (www.guichet.public.lu/entreprises/en/ressources-humaines/remuneration/paiement-remunerations/salaire/)
Netherlands	15: 30% (€452.35 per month); 16: 34% (€520.20 per month); 17: 39% (€595.60 per month); 18: 45% (€686.05 per month); 19: 52% (€791.60 per month); 20: 61% (€927.30 per month); 21: 72% (€1,093.15 per month); 22: 85% (€1,281.64 per month).	July 2015 rates. Government.nl (www.government.nl/topics/minimum-wage/contents/amount-of-the-minimum-wage)
New Zealand	16-19: 80% (\$11.80 per hour). This rate also applies to employees aged 20 years and over who are undertaking recognised industry training involving a minimum of 60 credits per year as part of their employment contract. Apprentices are included in this.	Starting-out and Training Minimum Wage Rates. Ministry of Business, Innovation and Employment (http://employment.govt.nz/er/pay/minimum-wage/)
Portugal	< 18: 75%	OECD (2015)
United Kingdom	15-17: 59% (£3.87 per hour); 18-20: 80% (£5.30 per hour). Separate rates for apprentices aged 16-18 and aged 19 and over who are in their first year of training (currently £3.30), while all other apprentices are entitled to the minimum wage for their age.	October 2015 rates. Gov.uk (www.gov.uk/government/organisations/low-pay-commission)
United States	<20: 58% (\$4.25). This rate only applies for the first 90 consecutive calendar days following recruitment. 16 and Above: 25% Employers can pay individuals aged 16 and above who are enrolled in a vocational education programme 25 per cent (minimum) of the adult Federal minimum wage.	Rate effective since July 2009. (www.dol.gov/general/topic/wages/minimum-wage)

Contd.

TABLE A.2 Continued

Country	Youth MW Rate(s)	Source
OECD Countries:		
Albania	The Council of Ministers have the authority to establish a reduced minimum wage rate for young people, but this provision has not been implemented.	ILO (2014)
Chad	14-16: 60%; 16-18: 80%. Young people that have obtained a Certificate of Professional Ability (vocational study qualification) are exempt from these sub-minimum wage rates, as are those that have passed a leaving exam from an accelerated vocational training centre.	ILO (2014)
Costa Rica	13-18: i) 50 per cent during the young person's first year of employment; ii) 75 per cent during the second year of employment; and iii) 100 per cent during the third year of employment.	OECD (2015b)
Latvia	< 18: 114 per cent of the statutory NMW rate. Due to regulation around the number of hours that a young person can work, those aged less than 18 get paid a higher hourly NMW rate compared to those aged 18 plus.	OECD (2015a)
Malta	<17: 94% (€158.39 per week); 17: 96% (€161.23 per week). For certain sectors, minimum wages are also differentiated by age.	2016 rates. dier.gov.mt (https://dier.gov.mt/en/Employment-Conditions/Wages/Pages/National-Minimum-Wage.aspx) and ILO (2014)
Slovak Republic	<18: 80%; 18-21: 90%.	OECD (2015b)
Turkey	<16: 86%.	ILO (2014)

Source: Compiled by the Authors.

TABLE A.3 Select List of OECD Countries with Apprentice / Trainee Pay Rates

Country	Youth MW	Youth Definition	Apprenticeships included	Training Rate	Note
Australia	Yes	15-20	No, separate rate	Yes	Two of Australia's five Special NMW Orders cover apprentices and trainees, which apply to all employees (i.e. are not age dependent).
Belgium	Yes	<18	No, separate rate	See Note	The sub-minimum wage rates that apply to individuals aged less than 18 in Belgium also apply to those on student contracts and those on work-linked training schemes (ILO, 2014).
Chile	Yes	15-17	No	-	Apprentices are excluded from Chile's statutory NMW.
France	Yes	15-18	No, separate rate	See Note	Young workers in a training contract receive a reduced minimum wage, as does apprentices of any age, or people pursuing a vocational training track, and those on state subsidised employment contracts.
Germany	See Appendix Table A.1	-	No, excluded from the statutory NMW	-	Apprentices and individuals undertaking internships of up to three months duration as part of an education or training course are exempt from the NMW.
Greece	Yes	<25	No, separate rate	-	Apprenticeships are provided by 51 Vocational Education Schools (EPAS), under the auspice of the Ministry of Education and OAED (Manpower Employment Organisation). Individuals aged 16-23 who have completed at least the first grade of Upper Secondary School can undertake an EPAS apprenticeship.
Ireland	Yes	<18	No	Yes	Apprentices are not included in Ireland's NMW legislation.
Israel	Yes	16-18	No, separate rate	-	Applies to individuals aged less than 18 only.
Luxembourg	Yes	15-18	No, separate rate	-	Applies to adolescents (minimum age 15) and adults (minimum age 18)
Netherlands	Yes	15-22	No, separate rate	-	Apprentice pay rates are negotiated through collective agreements and are at least the NMW or the youth minimum wage (Wren, 2013).
New Zealand	Starting-out wage'	16-19	See Note	Yes	Trainees and apprentices aged 20 years and over are covered by a 'training minimum wage', while those aged 16-19 are covered by the starting-out wage.
Portugal	Yes	<18	No, separate rate	-	
United Kingdom	Yes	15-20	See Note	-	There is a separate sub-minimum wage rate for apprentices aged 16-18 and those aged 19 and above who are in their first year of training; while all other apprentices are entitled to the minimum wage for their age.

Source: Compiled by the Authors.

TABLE A.4 Probability of Workers Earning the NMW in 2009

	Marginal Effect
Gender (Ref: Female)	
Male	-0.002***
Age (Ref: Age40-49)	
Age 15-24	0.007***
Age 25-29	0.003**
Age 30-39	0.001
Age 50-59	0.000
Age 60plus	0.001
Educational Attainment (Ref: Lower Secondary or less)	
Upper secondary	0.000
Post-secondary	0.000
Third-level non-degree	-0.001***
Third-level degree	-0.003***
Employment tenure	-0.000***
Part-time	0.005***
Shift work	0.001*
Trade union member	-0.002***
Professional body member	-0.002***
Migrant	0.004***
Contract Type (Ref: Indefinite Duration)	
Fixed- term contract	0.002**
Apprentice	0.010*
Other employment contract	0.003***
Firm size	-0.001***
Sector (Ref: Construction)	
Industry	0.000
Wholesale and retail	0.002
Transport and storage	0.003**
Accommodation and food	-0.001
Information and communication	0.000
Finance and insurance	0.000
Professional, scientific and technical	-0.001
Administrative and support	0.000
Public administration	-0.001*
Education	-0.002***
Health	-0.001
Arts	-0.001**
Observations	67,092
Pseudo R2	0.2450***

Source: Authors' analysis using data from the 2009 National Employment Survey.

Note: The estimated coefficients relate to marginal effects i.e. the marginal impact of each variable on the predicted probability that an individual will earn the NMW. As probabilities lie in the 0 to 1 range, the percentage impact of each variable can be obtained by multiplying the values in the table by 100. The asterisks denote statistical significance levels of 10 per cent (*), 5 per cent (**) and 1 per cent (***).

TABLE A.5 Probability an Employer will Hire any Workers at the NMW in 2009

	Marginal Effect
Gender (Ref: Female)	
% employees who are male	-0.0012***
Average age of workforce	-0.007***
Educational Attainment (binary variables: no reference cat)	
Firm hires any workers with no qualifications	0.086***
Firm hires any workers with lower secondary qualifications	0.010
Firm hires any workers with upper secondary qualifications	0.008
Firm hires any workers with post-secondary qualifications	0.010
Firm hires any workers with sub-degree qualifications	-0.039***
Firm hires any workers with third-level qualifications	-0.032**
Average employment tenure (years)	0.001
% of employees who are part-time	0.001***
% of employees who are shift workers	0.002***
% of employees who are trade union members	-0.002***
% of employees members of professional bodies	-0.001**
% of employees who are migrants	0.001*
Contract Type	
% of employees on fixed term contracts	0.001***
% of employees who are apprentices	0.000
% of employees on other forms of temporary contract	0.001**
Firm size	-0.001
Sector (Ref: Construction)	
Industry	-0.052**
Wholesale and retail	-0.158***
Transport and storage	0.049*
Accommodation and food	-0.075**
Information and communication	-0.173***
Finance and insurance	-0.118***
Professional, scientific and technical	-0.090***
Administrative and support	0.007
Public administration	-0.071*
Education	-0.142***
Health	-0.021
Arts	-0.025
Observations	4,682
Pseudo R2	0.1090***

Source: Authors' analysis using data from the 2009 National Employment Survey.

Note: The estimated coefficients relate to marginal effects i.e. the marginal impact of each variable on the predicted probability that an individual will earn the NMW. As probabilities lie in the 0 to 1 range, the percentage impact of each variable can be obtained by multiplying the values in the table by 100. The asterisks denote statistical significance levels of 10 per cent (*), 5 per cent (**) and 1 per cent (***)

Data Appendix A: National Employment Survey

Data from the 2009 National Employment Survey was used to generate descriptive statistics relating to the incidence of minimum wage employment.⁹³

In Table 3 the incidence of NMW is calculated in three ways.

1. Based on the survey responses from the NES Employee Survey where employees are asked whether they are in receipt of the adult minimum wage (€8.65 per hour), trainee minimum wage (€6.49-€7.79) or youth minimum wage (€6.06 per hour).
2. Based on the survey responses from the NES Employer Survey where employers are asked how many of their employees are in receipt of the adult minimum wage (€8.65 per hour), trainee minimum wage (€6.49-€7.79) or youth minimum wage (€6.06 per hour).
3. A derived variable that grosses weekly pay and hours to annual figures. This is divided by 52 to give weekly averages and then divided by weekly hours to give hourly pay. Persons earning €8-€9 are categorized as being in receipt of the national minimum wage, persons earning €6.50-€8 are categorized as receiving training rates and persons earning below €6.50 are categorized as receiving youth rates.

There are four statistics reported in Table 3,

1. NMW Incidence: The percentage of total survey respondents in receipt of the NMW
2. Youth NMW Incidence: The percentage of total survey respondents in receipt of the youth minimum wage
3. Trainee NMW Incidence: The percentage of total survey respondents in receipt of the trainee minimum wage
4. Total: The percentage of total survey respondents in receipt of either the NMW, youth minimum wage or trainee minimum wage.

⁹³ The surveys can be viewed at www.cso.ie/en/surveysandmethodology/earnings/nationalemploymentsurvey2009.

Data Appendix B: Description of Variables for Model (1.1)

Data from the 2009 National Employment Survey was used to estimate models (1.1) and (1.2). Table A.4 reports the results from regression (1.1). The variables used in the regression are described below.

Dependent Variable	
MW_{ij}	Binary variable which equals one if individual <i>i</i> in firm <i>j</i> reports being in receipt of the minimum wage and zero otherwise.
Independent Variables	
Male	Binary variable which equals one if an individual is male and zero if female.
Age	The age categories are binary variables. For example, Age 15-24 equals one if an individual falls within this age category and zero otherwise. All reported coefficients are relative to the age category 40-49.
Educational attainment	The educational attainment categories are binary variables and refer to the individual's highest level of completed education. For example, upper secondary equals one if an individual's highest level of educational attainment was upper secondary and zero otherwise. Reported coefficients are relative to the lower secondary or less category.
Employment tenure	The number of years of service with the current employer (reported to the nearest year).
Part-time	A binary variable which equals one if an individual reports being in part-time employment in October 2009 and zero otherwise.
Shift work	A binary variable which equals one if an individual reports being required to do shift-work and zero otherwise.
Trade union member	A binary variable which equals one if an individual reports being a member of a trade union and zero otherwise.
Professional body member	A binary variable which equals one if an individual reports being a member of a professional body (e.g. CIMA) and zero otherwise.
Migrant	A binary variable which equals one if an individual is a migrant and zero otherwise.
Contract type	The contract categories are binary variables. For example, apprentice equals one if an individual is an apprentice and zero otherwise. All reported coefficients are relative to the indefinite duration category.
Firm size	The number of employees in the individual's place of employment.
Sector	The sector categories are binary variables. For example, transport and storage equals one if an individual is employed in the transport and storage sector and zero otherwise. All reported coefficients are relative to the construction sector.

Source: Compiled by the Authors, based on the 2009 National Employment Survey.

Data Appendix C: Description of Variables for Model (1.2)

Table A.5 reports the results from regression (1.2). The variables used in the regression are described below.

Dependent Variable	
MW_j	Binary variable which equals one if employer <i>j</i> reports having at least one employee on the minimum wage and zero otherwise.
Independent Variables	
Male share	The percentage of employer <i>j</i> 's workforce that are male
Average age of workforce	Average age of employee's in firm <i>j</i> .
Educational attainment	The educational attainment categories are binary variables. For example the variable 'firm hires any workers with no qualifications' equals one if firm <i>j</i> has at least one worker with no qualifications and zero otherwise.
Average employment tenure	The average length of service of firm <i>j</i> 's employees (in years).
Part-time share	The percentage of employer <i>j</i> 's workforce that are part-time workers.
Shift-workers share	The percentage of employer <i>j</i> 's workforce that do shift work.
Trade union density	The percentage of employer <i>j</i> 's workforce that are members of a trade union.
Share of professional body members	The percentage of employer <i>j</i> 's workforce that are members of a professional body.
Share of migrants	The percentage of employer <i>j</i> 's workforce that are migrants.
Fixed hours share	The percentage of employer <i>j</i> 's workforce with fixed hours job attendance patterns.
Fixed-term contract share	The percentage of employer <i>j</i> 's workforce with fixed-term contracts.
Apprentice share	The percentage of employer <i>j</i> 's workforce with apprentice contracts.
Other employment contract share	The percentage of employer <i>j</i> 's workforce with other employment contracts.
Firm size	The total number of employees in firm <i>j</i> .
Sector	The sector categories are binary variables. For example, transport and storage equals one if employer <i>j</i> operates in the transport and storage sector and zero otherwise. All reported coefficients are relative to the construction sector.

Source: Compiled by the Authors, based on the 2009 National Employment Survey.

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