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The Irish Labour Market Since the Recession: Lifting the Veil on Long Term Trends

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ABSTRACT

Over the past twenty years, globally there has been a 'polarisation' of the labour market with middle paying jobs being hollowed out. However, during the construction boom the opposite pattern was seen in Ireland. This raised the question; did the construction boom mask underlying trends in the Irish labour market?

It is found that since the recession above average falls in the number of employees were found in the skilled trades occupations; administrative and secretarial occupations; and elementary occupations; while employment is actually up for managers, directors and senior officials; professional occupations, and associate professional and technical occupations. Though there is a lack of wage data available, the data that is available is consistent with Ireland following a pattern of polarisation, with employment and wage increases for those at the top, a hollowing out of middle paying jobs; and employment increases for those at the bottom, with wages largely influenced by institutional factors for these workers. These processes were already evident during the 2000s, but were masked by the increase in construction employment.

Over the coming years it is probable that there will be a continued expansion of employment for the higher paid, and stagnation or declines for those in middle paying occupations. This leads to a requirement for in-work training especially for those in clerical positions at risk of losing their jobs, to help workers up-skill and take advantage of new job opportunities. Also, consistent with international evidence, institutional support will continue to be necessary to protect the wages of lower paid workers.

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INTRODUCTION

The current recession involved a massive adjustment in the Republic of Ireland's labour market. From peak to trough 15.2% (328,700) of jobs were destroyed. During the same time private sector nominal hourly wages remained remarkably stable (though there were falls in the public sector). The changes in employment are usually discussed in relation to two causes. One is the extent to which changes were due to a once off adjustment (mainly to employment in the construction sector) as an unsustainable construction bubble collapsed. A second aspect is the extent to which jobs were lost due to the general impact of the recession (with the expectation being that these jobs will be recovered once the economy expands). A further (third) aspect, which has been somewhat neglected in the public discourse, is the extent to which changes in the labour market represent long term underlying trends (sometimes referred to as 'secular' trends). It is this third aspect, and the policy implications which follow, that form the focus of this paper.

Globally there has been an increase in inequality, and labour has been getting a smaller share of economic output. However, there is also a substantial international literature regarding growing inequality within the labour market, amongst wage earners. An increase in demand for a particular group of workers leads to an increase in wages (price) and employment (quantity), while an increase in supply of a particular group of workers can also lead to a increase in employment, but a relative decrease in wages. This literature has mainly focused on trends in the US examining how the demand for labour has changed, but research has also been conducted for European economies. Two main trends have occurred, though to different extents in various countries. One is a pattern of higher employment growth and wage increases for top wage earners. The other pattern which is common is one of 'polarisation'. With polarisation there is greater job growth for those at the top of the wage distribution, and for those at the bottom, with a hollowing out of middle paying jobs.

Various hypotheses have been put forward to explain why these trends might happen. One explanation for why wages and employment may increase for those at the top is 'skill biased technical change'. Technological change (such as the development of computers) may increase the productivity of higher educated workers more than other workers, leading to a higher demand and higher wages for the more highly educated (Acemoglu, 2002). Also, export orientated firms and multinationals tend to be associated with more highly educated workers (Helpman et al., 2010), so an increase in globalisation (or an industrial policy that is export orientated) can lead to a higher demand for the more highly educated. While this can explain why wages for those at the top can pull away from the rest of the workforce, it does not explain polarisation. Polarisation (in terms of jobs, rather than wages) could happen as middle paying jobs (such as clerical work) tend to be more routine in nature and can be more easily computerised or off-shored than low paying jobs (such as cleaning) or high paying jobs (such as legal advice) (Autor et al., 2003). Therefore job growth at the bottom could be due to formerly middle paid workers being pushed into lower paid occupations, while others manage to

upgrade and gain better paid employment. In a form of 'trickle down' theory it has also been suggested that a combination of technical change and higher incomes for those at the top can lead to an increase in demand for services such as house-cleaning, which tend to be low paid (Autor and Dorn, 2013). Alternatively, deregulation of labour markets has been suggested as a cause for increase in low paid employment. While there is no consensus as to why wages are changing for those at the top; it is generally accepted that it is happening internationally. However, there is consensus that wages for the lower paid are largely determined by institutional factors (such as the minimum wage and unionisation), but this does not explain changes in employment.

During the 2000s Ireland was unusual in not showing this pattern, with employment and wage increases for those in middle paying occupations. However, the construction boom masked the underlying changes in the structure of the labour market. It is found that since the recession above average falls in the number of employees were found in the skilled trades occupations; administrative and secretarial occupations; and elementary occupations; while employment is actually up for managers, directors and senior officials; professional occupations, and associate professional and technical occupations. Though there is a lack of wage data available, the data that is available is consistent with Ireland following a pattern of polarisation, with employment and wage increases for those at the top, a hollowing out of middle paying jobs, and employment increases for those at the bottom, with wages largely influenced by institutional factors. Though the polarisation of hours worked per week is also highly relevant, this is discussed in a separate paper (O'Farrell, 2013)

The rest of this section is presented as follows. In Section 2 an overview of international trends is presented, in Section 3 pay across the economy is examined while Section 4 looks at changes during the recession. Section 5 concludes.

1 INTERNATIONAL TRENDS

During the 1980s the US experienced large increases in wage inequality, while in the 1990s the growth in inequality began to slow (Card and DiNardo, 2002). However, during the 1990s inequality continued to grow at the top of the wage distribution (those with high incomes continued to have large wage increases) but wages at the bottom of the distribution became more compressed (Lemieux, 2008). The causes of such changes have been the subject of much debate. This debate has largely focused on whether skill biased technical change is a plausible explanation.

Skill biased technical change (SBTC) refers to changes in technology that increase the productivity of high skilled workers more than those who are low skilled. This hypothesis suggests that technological advances, such as the use of computers, are complementary to highly skilled workers. The introduction of such technology requires more skilled workers (and possibly less low skilled workers) which raises the relative demand for highly skilled workers. In turn, this increase in demand leads to wage increases for the highly skilled relative to those who are less skilled. It is worth noting however that the term 'skilled worker' is poorly defined and most studies use education as synomynous with skill. Early forms of the SBTC hypothesis predicted that technological change would increase inequality uniformly across the wage distribution. That is, inequality between workers with the lowest pay and those with median wages would increase as much as inequality between those with median wages and those with

top wages. In the 1980s this was indeed the case (Autor et al., 2008). Also, as wages for skilled workers were increasing at the same time as the supply of educated workers was increasing (due to increased educational attainment), this could only be consistent with increased demand for skilled workers (Acemoglu, 2002).

It is suggested technical change suddenly become more skill biased during the 1980s because personal computers were introduced in the early 1980s. In contrast Card and Lemiuex (2001) proposed that changes in the supply of skilled workers was the cause of increased wages for skilled workers. In the US there was an increase in educational attainment for those in cohorts born up to the early 1950s (those who would have reached college going age during the Vietnam war) followed by stagnation (Card and Lemiuex (2001). They propose that if the demand for skilled workers is steadily increasing, and the supply of skilled workers increases so as to keep pace, then skilled wages relative to unskilled wages will remain stable. If the increases in the supply of skilled workers slow down, this will lead to a relative shortage of skilled workers and increased relative wages. Though the hypothesis of Card and Lemiuex (2001) explains the change in patterns of inequality to be due to a slowdown in the supply of skilled workers, it still relies upon constant increases in SBTC.

In a paper critical of the SBTC hypothesis, Card and DiNardo (2002) find that during the 1990s changes in overall wage inequality began to level off. Also the 1990s was the period during which the computer revolution began to take hold. Instead of SBTC, they suggest that the changes in inequality in the 1980s were a once off 'episodic' event, and put forward institutional changes as a better explanation. They find that changes in the real value of the minimum wage serves as a good explanation of overall wage inequality. However, Autor et al. (2008) examined the structure of wages more closely, and some interesting patterns emerged during the 1990s. Since the 1980s there was a steady increase in wage inequality at the top of the wage distribution (the rich continued to get richer), and this pattern continued into the 1990s. During the 1980s there was also increasing inequality at the bottom of the wage distribution, however during the 1990s there was greater equality at the bottom of the distribution (low incomes and median incomes began to converge). This is why the 1990s showed greater wage equality. Though inequality continued to grow at the top, the wage compression at the bottom led the aggregate equality statistics to show greater equality. Autor et al. (2008) show that there was a hollowing out of middle skill jobs, leading to polarisation. Institutional change was viewed as a plausible explanation for changing patterns in the lower half of the distribution, though less so for the top of the wage distribution.

Rather than computerisation, 'technical change' could be driven by changes in how firms are organised or other changes such 'just in time' production. In the early 2000s Card and DiNardo (2002) gave two main hypotheses for SBTC. Either SBTC will raise the income of those who use computers or SBTC will raise the demand for more highly paid workers in general. In an important paper Autor et al. (2003) refined the SBTC hypothesis. They proposed that computer technology allows for the substitution of workers doing 'routine' manual tasks (such as some skilled manual tasks in a factory) and 'routine' non-manual tasks (such as clerical work). These routine tasks can be can be formalised into rules that can be written into computer programs. In contrast, it is more difficult to codify non-routine manual and non-manual tasks. Non-routine non-manual tasks include problem solving and complex communication, tasks which are complementary with computer technology. Hence, the refined SBTC hypothesis would predict increased demand for non-routine non-manual tasks, and less demand for those doing routine

tasks. No prediction is made with regard to non-routine manual tasks (which range from cleaning to some highly skilled manual craft jobs). Autor et al. (2003) show that those doing non-routine non-manual tasks tend to be higher educated, and so the refined hypothesis explains why their wages increase. They also claim that as those doing routine tasks tend to have middle incomes, the hypothesis explains wage compression at the bottom of the distribution. Some middle skilled workers successfully switched to performing higher paid non-routine non-manual tasks, while some were performing lower skilled jobs for which they were over-qualified. Hence the refined SBTC hypothesis can help explain employment polarisation.

There have been other refinements of the SBTC hypothesis and the presentation of mechanisms through which SBTC could increase wages. Rather than considering SBTC to be a constantly steadily increasing phenomenon, Acemoglu (2002) suggests that it may be endogenous, such that increases in the supply of skilled workers promote investment in skill biased technology. He also suggests SBTC can lead to de-unionisation as the wage compression that unions bring becomes more costly for high skilled workers. This highlights the plausible interactions between institutions and technical change. A similar reason is put forward for the decline in centralised wage bargaining in northern Europe (Ortigueira, 2013). Lemieux et al. (2009) give another mechanism that can lead to greater wage inequality, a mechanism that they suggest works with SBTC. Performance pay is concentrated at the top of the wage distribution, where inequality increased the most. They find that the spread of performance pay can help account for 21 per cent of the growth of the variance in male wages between the late 1970s and early 1990s, and most of the wage inequality above the 80th percentile. They suggest that advances in computer technology can reduce the cost of monitoring workers performance, making the introduction of performance pay more feasible. Another possibility they put forward is that if SBTC raises the demand for high productivity workers then this could increase the benefits of having a performance pay system. Finally, the possible interactions of institutions and such changes are again shown as performance pay is used less for lower skill workers and de-unionisation may have enabled the introduction of performance pay.

Institutional changes (such as de-unionisation and changes to the minimum wage) have emerged as likely explanations for changes in wages at the lower half of the income distribution. Though SBTC is a possible explanation for wage changes from the 50th to 90th percentile, it is not without its puzzles. The refined hypothesis of Autor et al. (2003) explicitly refers to the role of computerisation in removing 'routine' jobs. However, Card and DiNardo (2002) and Lemieux (2008) show that the wages of those most closely associated with the computer revolution, such as computer programmers, actually relatively declined. Nevertheless, the removal of routine jobs does give a plausible explanation for wage polarisation and there are alternative possibilities for the reduction in routine jobs. One possibility is that routine jobs are susceptible to offshoring. Also there is no reason given for why changes in IT would cause the destruction of routine jobs any more than previous technological changes. Finally, SBTC is perhaps a poor explanation for wage trends above the 90th percentile. Their relatively poor performance during the Second World War up to the 1960s is better explained by institutional change.

A criticism of the skill biased technical change hypothesis is that, as advanced countries have access to the same technology, we would expect similar patterns across countries. The pattern of increasing inequality at the top of the wage distribution, and stable inequality at the bottom, has occurred in several countries. Such a pattern has been found for Portugal between 1986 and 1995 (Machado and Mata, 2005) where wages increased by 27 per cent for those at the 30th

percentile, but by 38 per cent for those at the 90th percentile, with education being at the centre of observed increases. In Denmark wage dispersion at the top of the distribution increased in the early 1990s, and then stabilised (Eriksson and Westergaard-Nielsen, 2008), while the return to education almost doubled from 1980 to 2000. A similar pattern of a relatively stable wage distribution at the bottom, but increasing dispersion at the top was found in the UK over the 1980s and 1990s, though there was a jump in wage dispersion at the bottom of the distribution in the late 1980s (Goos and Manning, 2007), and Greece and Belgium from 1995 to 2002 (Christopoulou et al. 2010). The pattern was found for Italy (Contini, et al., 2008) from 1985 to 1999 thought the effect changed somewhat from 1995 to 2002 (Christopoulou et al. 2010), when wage increases for the very top were more in line with the middle of the distribution. For Sweden the wage compression that occurred during the 1960s and 1970s was reversed by the 1990s (Oyer, 2008). Also in Sweden the university wage premium was strongly negatively related to the supply of university educated workers, but this relationship broke down after the mid-1990s (Nordstrom Skans, et al., 2008). In contrast to the general pattern, from 1980 to 1997 the wage distribution was stable for Norway (Hunnes et al., 2008), and in Finland the wage distribution was stable for salaried workers in manufacturing (Uusitalo and Vartianinen et al, 2008). The most striking difference with the US however is Germany. In Germany wage inequality increased at the top of the wage distribution during the 1980s and 1990s, but also increased at the bottom during the 1990s (Dustmann et al., 2009). This pattern in inequality at the bottom of the distribution is the opposite of what happened in the US. Although increasing inequality at the top of the wage distribution is common to most countries, it is important to note that the magnitude and timing of such changes has varied greatly. This suggests that other factors play an important role. Unfortunately, directly comparable European wage surveys were first carried out in 1995. This limits the ability to make cross country comparisons.

Simón (2010) makes use of such a survey (using the 2002 European Structure of Earnings Survey) to determine what causes differences in patterns of inequality across nine European countries. Within countries wage differentials are mainly due to differences between firms. On average, job characteristics explain 21 per cent of within country wage inequality, workplace characteristics explain 18.7 per cent and observed individual differences explain 17.2 per cent. Unobserved differences are also very important. Cross-country differences are largely due to differences in returns to characteristics, rather than differences in characteristics of firms and employees across countries, though most of the variation is actually among those with identical observed skills and other individual characteristics. This is in line with research by Lazear and Shaw (2008) who found that inequality is decreasing within firms and that increasingly the firm matters more for explaining the wage distribution. Interestingly Simón (2010) finds that international differences in inequality are mainly due to differences at the top of the wage distribution. As most of the changes in wage inequality are due to changes in the top of the wage distribution, it is logical that this is where most of the cross country variability would be.

The hypothesis of Autor et al. (2003), that computerisation would lead to a reduction of 'routine' jobs, made no prediction as to what would happen to demand for non-routine manual jobs. However, this hypothesis has been used to as the basis for a labour market polarisation hypothesis. Manning (2004) suggests that increasing inequality can lead to increased demand for services provided by the low skilled (such as bar workers), a hypothesis formalised by Autor and Dorn (2013). This is as the increased incomes of the rich will mean they will demand more of these services. Manning (2004) suggests that if wage inequality is large enough then the rich

will always want the poor to do mundane tasks for them, creating a demand for the labour of the low skilled when machines cannot substitute for such mundane labour. It should be noted however that this explanation for increased demand for low skilled occupations simply requires inequality, and does not specifically require such inequality to be caused by technical change. If the hypothesis of Manning (2004) is correct the increased demand for low-skilled labour should increase low-skilled employment and wages, whereas the hypothesis of Autor et al. (2003) would be consistent with higher low-skilled employment and lower wages for the low-skilled.

This hypothesis has been tested for sixteen European countries, though most attention has been focused on Britain and Germany. Goos and Manning (2007) find some evidence in favour of the hypothesis of polarisation for Britain from 1975-1999. There has been a rise in employment in the highest and lowest paid occupations. However, only for the top three deciles is there evidence in favour of SBTC. There has been a rise in occupational attainment across occupations, but this may be due to credentialism (the need for formal certification or credentials to get a job). They find most of the rise in inequality has been at the top of the distribution and that within-job wage inequality explains a very small amount of the increase in inequality. Though the paper of Goos and Manning (2007) does offer support in favour of the hypothesis of Autor et al. (2003), the lack of wage gains for low-skill jobs suggests there has been no increase in demand, but that some workers in medium skilled jobs have been moving to low-skilled jobs. Goos and Manning (2007) suggest that instintutional factors such as the minimum wage or deunionisation may explain why wages have not increased at the bottom of the distribution.

Ignoring wage changes, but using West German data (1975-1999) on tasks within occupations, Spitz-Oener (2006) finds some evidence for the de-routinisation hypothesis of Autor et al. (2003), though the evidence for polarisation is somewhat weaker. Spitz-Oener (2006) finds skill requirements have changed within occupations and changes were largest in industries that were rapidly computerised. She concludes that changing occupational skill requirements explains a significant part of the educational skill upgrading of recent decades in Germany. Analytical and interactive tasks increased for each education group, but routine cognitive and manual tasks declined. The decline in routine cognitive tasks and increase in interactive and analytical tasks was strongest for the high-education group. This is not consistent with a hypothesis that changes are due to the increased supply of educated workers, as highly educated workers are not doing tasks formerly done by medium educated workers. It suggests that skill requirements were rising faster for higher educated employees than other groups. There has also been an increase in non-routine manual tasks for medium and low skill workers. Spitz-Oener (2006) concludes that as the change is mainly within occupations, rather than changes in final demand, technical change is the most plausible hypothesis. She states that in contrast to SBTC, the deindustrialisation and globalisation hypotheses emphasise between-industry and between-occupation changes. However, it could be possible that globalisation leads to the outsourcing of tasks within industries and occupations, a possibility that is not considered by Spitz-Oener (2006). Following the de-routinisation hypothesis of Autor et al. (2003), Spitz-Oener (2006) finds a positive link between educational attainment and the time spent on non-routine cognitive tasks. Using this to define whether a job is high or low skilled Spitz-Oener (2006) finds some evidence consistent with polarisation, with a hollowing out of middle-skilled occupations. However, this approach should be treated with caution. Blacksmiths are termed low-skilled because they do not perform many non-routine cognitive functions. This

ignores the high level of skills required by artisans performing non-routine manual tasks. Research that complements that Spitz-Oener (2006), is work by Dustmann et al. (2009) who investigate the West German wage structure from 1975 to 2004. Starting in the late 1980s there was a rise in the wage differential for medium skilled workers relative to the lower skilled, evidence against polarisation, but in terms of employment occupations in the middle lost ground. This is evidence against increasing demand for low skilled workers, but is still consistent with the hypothesis of Autor et al. (2003). Ignoring general equilibrium effects, Dustmann et al. (2009) find that the majority of the increase in inequality occurred within age and education groups and that changes in the composition of the workforce only explains up to 50% of the rise in inequality for the top half of the wage distribution and 15% for the bottom half. In comparison, de-unionisation explains 28% of the rise in inequality in the bottom of the wage distribution, but only 11 per cent at the top. Overall, for Britain and Germany the evidence is consistent with the hypothesis of Autor et al. (2003), though there is no evidence in favour of an increased demand for unskilled labour.

Though not studied in the same depth as Britain and Germany, Goos et al. (2009) look at job polarisation for sixteen European countries from 1993 to 2006. Goos et al. (2009) divide jobs into low, medium, and high paid occupations. Apart from Portugal, for all countries middling jobs showed the largest decreases in the share of employment. However, only half the countries showed job polarisation (Belgium, Germany, Greece, Netherlands, Norway, Spain, Sweden, and the UK), and five countries (Austria, Denmark, France, Italy, Luxembourg) showed a general movement towards the higher paid occupations. For Finland, Ireland, and Portugal there were actually increases in the share of employment for low paid occupations (and decreases for high paid occupations). The case of Finland is particularly interesting as this evidence against both SBTC and polarisation occurred in a country at the vanguard of the technological revolution. Employment is only one half of labour market outcomes, and Christopoulou et al (2010) look at changes in wage structure for nine European countries from 1995 to 2002. Though this research uses different sources and covers a different time-span to that of Goos et al. (2009) it is still a useful complementary research. If there was an increase in demand for low skilled workers one would expect an increase in wages for the bottom deciles in comparison to the middle. Only for Ireland, Spain and Hungary this is the case. Only these countries have a broadly U-shaped pattern of wage increases. The authors decompose wage changes due to changes in the composition of the workforce and changes in returns (how wages change for a if workers' characteristics are constant). For Ireland the wage effect is actually downward sloping. This, combined with the evidence from Goos et al. (2009) is evidence of an increase in demand for low-skilled workers and is the opposite of the SBTC hypothesis. For the other six countries wage increases are highest for those on higher incomes, but the patterns vary greatly for each country.

Given that technology is open to all countries covered, that countries have very differing patterns should be considered evidence against the SBTC and polarisation hypothesises, or at least that country specific characteristics play an important role. The effect of institutional differences cannot be ignored.

The most recent pan-European survey was conducted by Eurofound (Hurley et al., 2013). They conclude that in general across the EU in the period 1998 to 2007 there was 'slightly polarised upgrading', with a larger relative expansion of higher paying jobs, and between 2008 and 2010 there was 'slightly upgrading polarisation', with net job destruction due to the hollowing out of

middle paying jobs, but some marginal job gains in lower and top paying jobs. They also find that some of the clearest cases of polarisation appear to be linked to institutional changes, such as the de-standardisation of employment regulation.

Cross country differences can perhaps be explained by institutional differences, though as shown by Acemoglu (2002), the two phenomena can be linked. Eriksson and Westergaard-Nielsen (2008) describe changes in wage setting institutions is the 'prime suspect' for changes in the wage structure in Denmark. In a cross-country analysis Koeniger et. al (2007), use data from Australia, Canada, Finland, France, Germany, Italy, Japan, Netherlands, Sweden, the UK and US to study the effect of institutions on inequality. They find that from 1973 to 1998 in France that institutional changes accounted for 23 per cent of the fall in male inequality, but institutions also account for increases of up to 11 per cent in inequality in the UK and US where unions declined and the minimum wage fell. Employment protection, a minimum wage, and the benefit replacement rate were all found to decrease inequality, and with benefit duration particularly affecting the 50/90 inequality measure, and union density affecting the whole distribution. Somewhat in contradiction to the SBTC hypothesis, investment in research and development was found to reduce inequality. Unfortunately however, the measurement of these effects must be treated with caution due to the difficulty in comparing institutions across countries and over time.

In conclusion, there is almost no evidence of an increase in the demand for low-skilled labour up to 2002, and increases in employment may be due to increases in supply. The increase in those employed in low skill jobs could be consistent with the hypothesis of Autor et al. (2003). Some of those formerly performing middling job could have been substituted for by technology, and now compete for low-skill jobs, putting downward pressure on low skill wages. These hypotheses were put forward to explain the reduced wage inequality at the bottom of the US wage distribution during the 1990s. Dustmann et al (2009) show how changes in the wage structure in Germany have differed to the US. In Germany inequality increased at the top of the wage distribution during the 1980s and 1990s, and also increased in the bottom during the 1990s. This is the exact opposite timing to the US where wage inequality increased at the bottom in the 1980s and then stopped during the 1990s. Overall the hypothesis explains changes in employment far better than changes in wages, and it should be remember that just because evidence may be consistent with a theory, this should not be considered proof of a theory.

A consensus is emerging for changes to part of the wage distribution, though debate is continuing for other parts of the wage distribution. With regard to the bottom half of the income distribution institutions such as the minimum wage play an important role in increasing equality. As the minimum wage usually sets a target of a percentage of the median wage this is hardly surprising. For top wage shares different institutional factors such as inheritance tax and progressive taxation are important. This leaves changes between about the 50th and 90th percentile that is under debate. Regardless of the cause, these workers have fared relatively better over the past thirty years.

3 WHAT ARE PAY RATES FOR DIFFERENT JOBS?

Table 1: Hourly pay by broad occupation and sector (Q1 2010)

Sector	All employees	Managers, professionals and associated professionals	Clerical, sales and service employees	Production, transport, craft and other manual workers
All NACE economic sectors	€22.11	€32.77	€16.50	€15.80
Mining and quarrying (B)	€21.65	€32.34	€19.03	€19.62
Manufacturing (C)	€21.50	€33.68	€20.00	€16.61
Construction (F)	€20.36	€27.74	€18.03	€17.98
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	€16.44	€26.82	€13.63	€13.54
Transportation and storage (H)	€19.19	€34.78	€18.35	€16.06
Accommodation and food service activities (I)	€12.69	€18.88	€11.46	€11.39
Information and communication (J)	€25.87	€31.44	€18.94	€20.56
Professional, scientific and technical activities (M)	€26.53	€33.77	€17.26	€16.18
Administrative and support service activities (N)	€16.30	€31.97	€13.99	€12.95
Public administration and defence; compulsory social security (O)	€26.42	€31.79	€23.11	€17.90
Education (P)	€35.62	€42.57	€18.04	€15.49
Human health and social work activities (Q)	€23.46	€28.57	€17.85	€15.60
Electricity, water supply and waste management (D,E)	€29.91	€50.16	€28.35	€21.39
Financial, insurance and real estate activities (K,L)	€30.57	€41.88	€19.32	€14.93
Arts, entertainment, recreation and other service activities (R,S)	€16.04	€26.06	€13.46	€12.81

Source: CSO Statbank: EHECS Earnings Hours and Employment Costs Survey Quarterly (EQH03)
Notes: Red colouring refers to low paid jobs, while green refers to relatively high paid jobs.
The values represent mean hourly pay.
Letters refer to NACE codes, the standard EU method for classifying economic sectors.

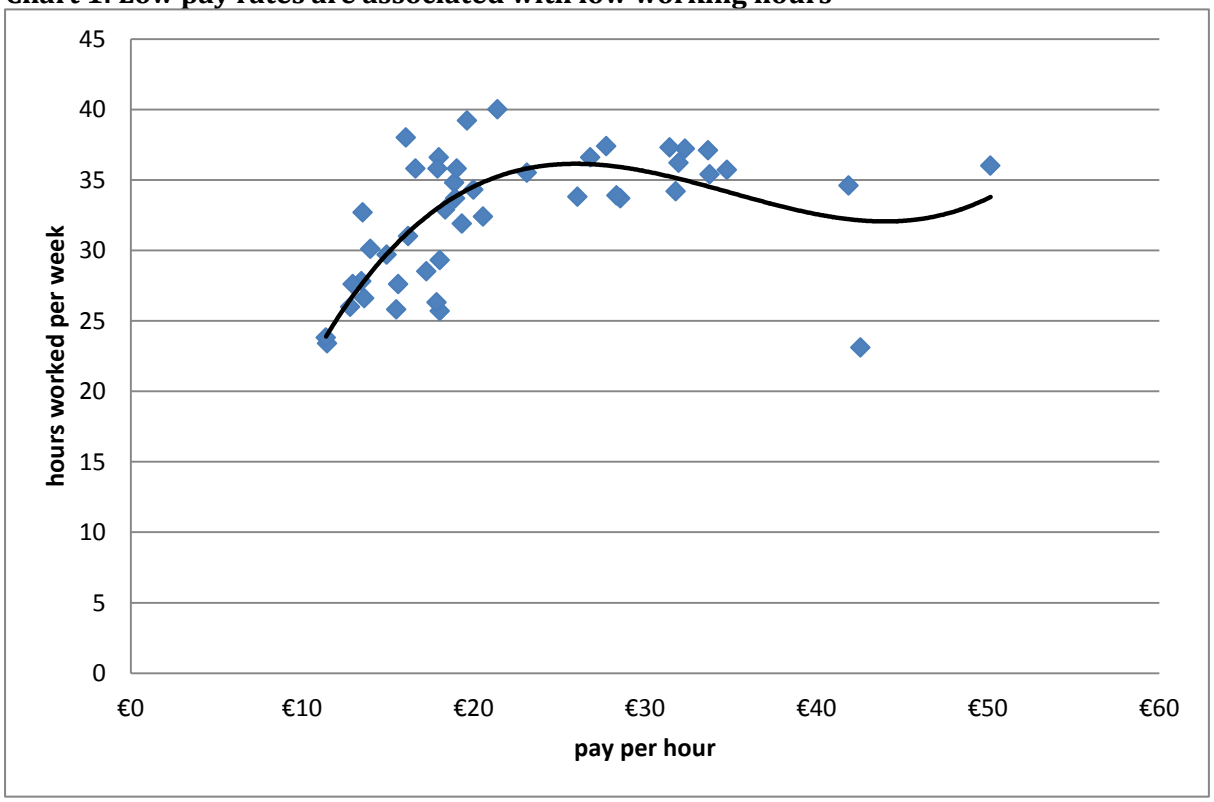
Table 1 outlines average hourly pay for various jobs in the Irish economy in the first quarter of 2010. A more detailed breakdown (based on the European Structure of Earnings Survey for 2010) is included in Appendix Table A1. Within that table red colouring refers to low paid jobs, while green refers to relatively high paid jobs. Though there have been some changes in wage since then, these are not likely to have greatly affected the ranking of the different jobs[1]. Unsurprisingly, as is seen from Table 1 "managers, professionals and associated professionals" are the highest paid group. Workers in the education sector get the highest hourly pay (though this may be exaggerated by an underestimation of hours worked in the Education sector) followed by the Financial, insurance and real estate sector. Being in the top group is not enough

[1] Studies of wage changes since the recession include Bergin et al. (2012) and Walsh (2012).

to ensure a high wage however. Managers, professionals and associated professionals in the Accommodation and Food sector earn an average of €18.88 per hour which is below the economy's average hourly wage of €22.11. The Accommodation and Food sector is clearly the lowest paid sector of the economy, with hourly pay for clerical, sales and manual workers in this sector roughly half the national average. It should be noted that working hours tend to be measured more accurately for waged workers than salaried workers, so the reported hours worked for some high paid workers may be unreliable (and are likely underestimated). Of course, occupational categories are not homogenous groups. For example both economists and saxophonists are both in the 'professional' category, and the 'service and sales' category includes chefs, waiting staff, and fire-fighters. A better breakdown is possible by tabulating occupation with economic sector, as seen in Appendix Table A1. For example, a mangers in the Financial and insurance sector is paid more than double what a manager in the accommodation and food sector is paid.

Low pay is officially defined as two thirds of the median gross hourly wage (Eurostat, 2013). In 2010 20.7 percent of the workforce was low paid, with the cut-off point being €12.20 per hour (Eurostat, 2013). If someone were to be working full time (39 hours per week) this equals an annual income of just under €25,000 per year.

Chart 1: Low pay rates are associated with low working hours



Source: CSO: EHECS Earnings Hours and Employment Costs Survey Quarterly (EQH03) and own calculations.

Note: More information is available in O'Farrell (2013). Dots represent the hour wage and average hours worked of specific jobs. Jobs are as in the final three columns of Table 1. Hours are as listed in Appendix Table A2. The fitted line is a third order polynomial

The issue of low pay is compounded by the fact that low paid workers also tend to have a shorter working week, with the issue being particularly noticeable in the service sector. As can be seen from Chart 1, for pay rates between approximately €10 per hour and €20 per hour there is a strong relationship between low paid workers having a shorter working week. The effect tails off at about €20 per hour with such workers tending to work fulltime. Also, in the manufacturing sector both low paid and high paid workers tend to work fulltime. The cause of this can likely be attributed to managers in the service sector wishing to have a 'pool of workers' to choose from as this boosts their bargaining position when trying to get workers to work flexible hours. This tends to be less pronounced for higher paid workers. It is more expensive to hire such workers, so the cost to employers of maintaining such as pool would be prohibitive. Table 2 shows how these two factors interact leading to stark differences in weekly wages. A more complete discussion of this issue is given in O'Farrell (2013).

Table 2: Weekly pay by broad occupation and sector (Q1 2010)

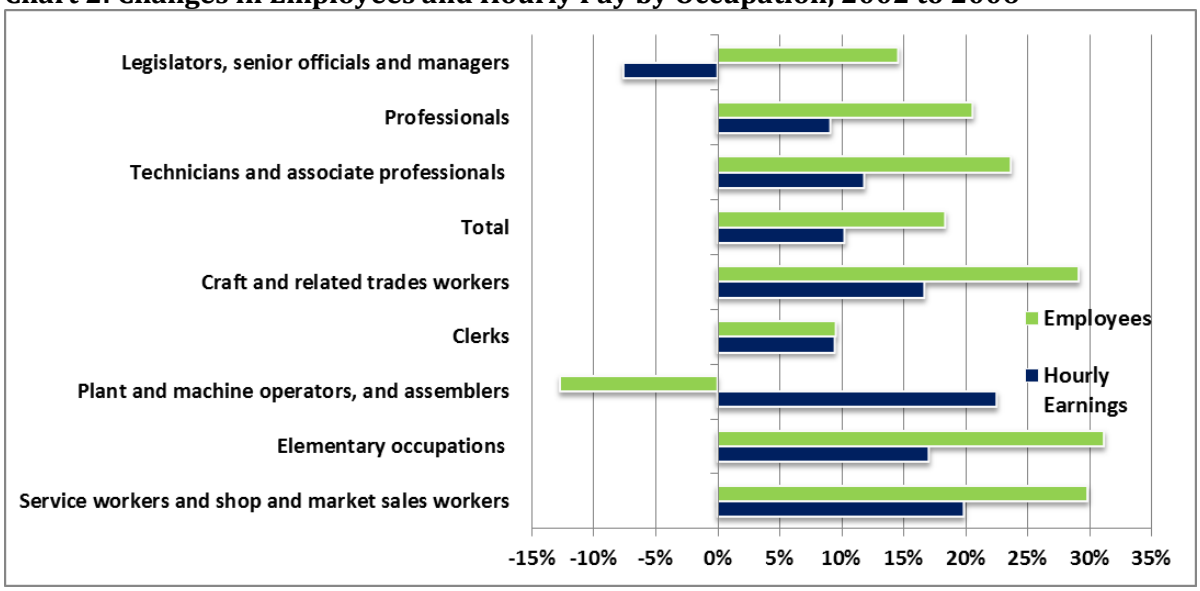
Sector	All employees	Managers, professionals and associated professionals	Clerical, sales and service employees	Production, transport, craft and other manual workers
All NACE economic sectors	€686.02	€1,080.86	€469.20	€516.47
Mining and quarrying (B)	€828.56	€1,202.61	€680.21	€769.74
Manufacturing (C)	€771.93	€1,248.36	€685.99	€594.99
Construction (F)	€722.17	€1,036.40	€528.81	€657.35
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	€482.62	€981.22	€362.11	€442.15
Transportation and storage (H)	€683.27	€1,240.83	€604.25	€610.29
Accommodation and food service activities (I)	€316.07	€656.35	€268.56	€271.29
Information and communication (J)	€915.94	€1,172.50	€638.53	€667.17
Professional, scientific and technical activities (M)	€856.90	€1,195.06	€492.59	€502.24
Administrative and support service activities (N)	€488.24	€1,156.73	€420.73	€356.71
Public administration and defence; compulsory social security (O)	€923.22	€1,088.86	€820.39	€640.08
Education (P)	€845.59	€981.31	€464.10	€400.29
Human health and social work activities (Q)	€706.36	€963.84	€469.00	€431.20
Electricity, water supply and waste management (D,E)	€1,112.25	€1,807.07	€959.85	€854.93
Financial, insurance and real estate activities (K,L)	€1,013.75	€1,449.24	€617.00	€443.36
Arts, entertainment, recreation and other service activities (R,S)	€454.62	€881.29	€374.41	€332.74

Source: CSO: EHECS Earnings Hours and Employment Costs Survey Quarterly (EQH03)
Notes: Red colouring refers to low paid jobs, while green refers to relatively high paid jobs. Letters refer to NACE codes, the standard EU method for classifying economic sectors. The values represent mean annual pay. Corresponding data on average hours worked per week is presented in Table A2 in the appendix.

4 CHANGES DURING THE CONSTRUCTION BOOM

A Eurofound study found that in the decade running up to the 2008 financial crisis the pattern across Europe was one of 'slightly polarised upgrading' (Hurley et al., 2013) whereby both low paying and high paying jobs were created (though slightly more high paying jobs were created, leading to the term upgrading). Job gains for middle paying jobs were smaller in scale. It should be noted that what was a highly specialised task in 1998 (such as web-design) may not need the same level of training by 2008. Between 2008 and 2010 (the latest year covered by the Eurofound study) the pattern of polarised upgrading continued, but this time in a context of job losses (with the greatest job losses amongst middle paying jobs). A change in employment does not necessarily mean a change in the demand for labour. An increase in labour supply (such as due to migration) can also lead to an increase in employment. However, if the changes are driven by a change in labour demand, then we would expect wage developments to follow the same pattern as employment. The evidence that is available (Christopoulou, et al. 2010 look at the years 1995 to 2002) suggests that this is the case. For most countries wage increases have tended to benefit either those at the top, or both the top and bottom, with the middle left behind.

Chart 2: Changes in Employees and Hourly Pay by Occupation, 2002 to 2006



Source: Eurostat: European Structure of Earnings Survey and Labour Force Survey (earn_ses_agt18, earn_ses06_47, lfsa_eegais) and own calculations.

Note: Pay data refers to NACE Rev 1.1 sectors C-O. Occupations are sorted by 2002 hourly pay rates. Underlying data can be seen in Table 3. Employee numbers are derived from the Eurostat Labour Force Survey (lfsa_eegais) with the total figure being for the whole economy. Skilled agricultural employees are excluded due to a lack of data.

Ireland is different. Between 1995 and 2007 job growth occurred across most job types (Hurley et al., 2013). Also, there was a strong increase in demand for labour for those at the bottom, with these workers gaining strong wage increases between 1995 and 2002 (Christopoulou, et al. 2010). Chart 2 shows the changes in numbers of employees and wages by occupation

between 2002 and 2006[2]. As can be seen there were above average relative increases in pay for lower paid categories such as those in elementary occupations (which includes occupations such as cleaners, labourers and porters); and service workers and shop and market sales workers. As institutional factors (such as union bargaining, minimum wages, and sectoral bargaining including Joint Labour Committees) have a strong influence on wages in these sectors, the pattern of pay here being driven by institutional factors is consistent with international evidence. As both employee numbers (quantity) and pay (price) increased, this shows there was a genuine increase in demand for these occupations. However, what is not consistent with other countries is that there was no major hollowing out of the labour market. This is largely due to increases in numbers of employees and pay for those in craft and related trades (which includes a large number of occupations linked to the construction sector). However, though clerical employment did increase, they lost their relative position to other occupations, and the number of employees that are plant and machine operators, and assemblers declined. This shows that some of the processes of the de-routinisation hypothesis were already taking place. The data can be seen in Table 3.

Table 3: Hourly pay and Employee Numbers by Occupation (2002 and 2006)

	Hourly Pay		Employees ('000s)	
	2002	2006	2002	2006
Legislators, senior officials and managers	€29.67	€27.42	144.2	165.3
Professionals	€27.50	€30.02	254.9	307.5
Technicians and associate professionals	€19.67	€22.01	83.9	103.8
Clerks	€14.95	€16.37	230.0	252.1
Service workers and shop and market sales workers	€11.86	€14.22	257.8	334.9
Craft and related trades workers	€15.65	€18.27	169.5	219.0
Plant and machine operators, and assemblers	€12.90	€15.81	149.2	130.3
Elementary occupations	€11.93	€13.97	138.0	181.1
Total	€18.52	€20.43	1445.9	1712.0

Source: Eurostat: European Structure of Earnings Survey and Labour Force Survey (earn_ses_agt18, earn_ses06_47, lfsa_eegais) and own calculations.

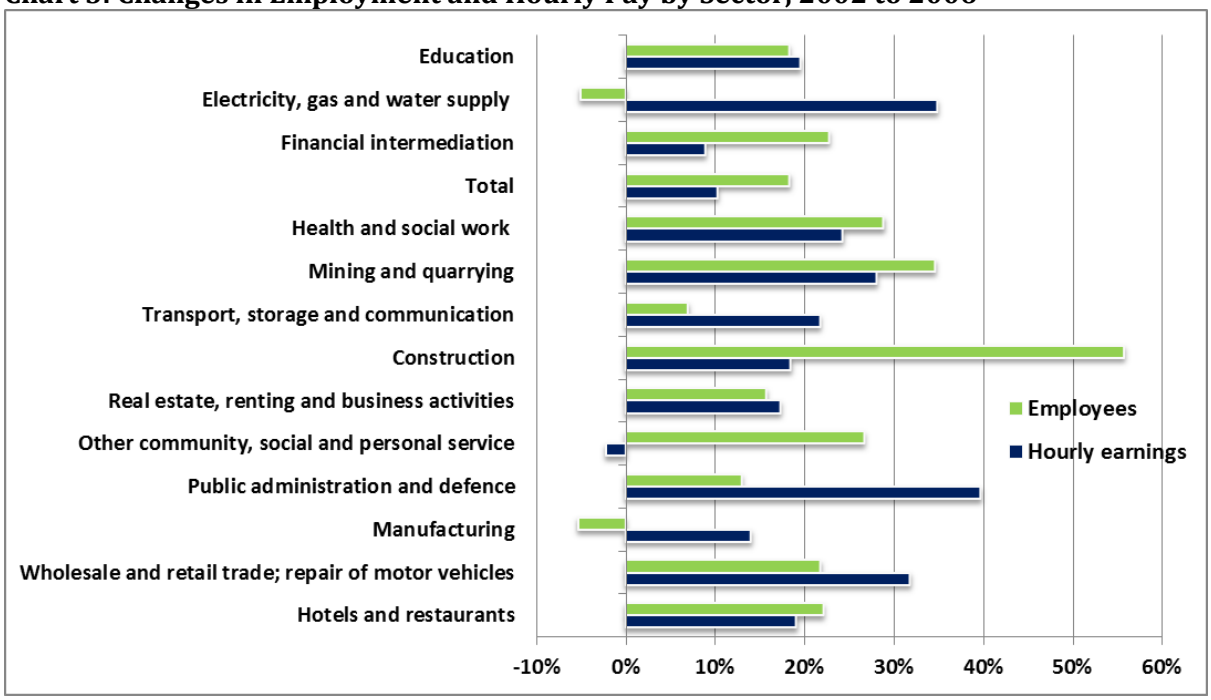
Note: Pay data refers to NACE Rev 1.1 sectors C-O. Occupations are sorted by 2002 hourly pay rates. Employee numbers derive from the Eurostat Labour Force Survey (lfsa_eegais) with the total figure being for the whole economy. Skilled agricultural employees are excluded due to a lack of data.

Also, in contrast to other countries, higher paid occupations did not gain above average pay increases. Though the *average* (mean) pay of managers decreased, this may be a compositional issue. There was a large increase in the number of workers classified as managers, with the increase being largely in firms with less than 50 employees, which tend to pay less. (Unfortunately a more detailed breakdown by economic sector and occupation for 2002 is not publicly available. This is why data by occupation is presented separately to industrial sector). It should also be noted that there are substantial differences as to which occupation workers are

[2] Data is taken from the 2002 and 2006 European Structure of Earnings Survey. Despite being labelled the 2002 survey, data was taken for the 'representative month' of March 2003. For the 2006 survey October 2006 was the representative month.

classified under between the Labour Force Survey (which is derived from the Quarterly National Household Survey) and the Structure of Earnings Survey. As the Labour Force Survey is specifically designed to measure employment, employee numbers are taken from this source.

Chart 3: Changes in Employment and Hourly Pay by Sector, 2002 to 2006



Source: Eurostat: European Structure of Earnings Survey and Labour Force Survey (earn_ses_agt18, earn_ses06_47, lfsa_eegais) and own calculations.

Note: Pay data refers to NACE Rev 1.1 sectors C-O. Occupations are sorted by 2002 hourly pay rates. Underlying data can be seen in Table 4. Employee numbers derive from the Eurostat Labour Force Survey (lfsa_eegais) with the total figure being for the whole economy. Skilled agricultural employees are excluded due to a lack of data.

As can seen in Chart 4.2 there were large increases in the number of employees in relative low and middle paying sectors. This explains why the total change in wages is below that of most sectors. In 2002 in only three sectors (financial intermediation; electricity, gas and water supply; and education) was average pay above the average for the whole economy, but due to employee and pay increases in low to middle paying sectors by 2006 the distribution was less skewed with seven sectors paying above average wages and six below average. This evidence is consistent with a Eurofound study (Hurley et al., 2013) which found that once the construction sector is excluded, a pattern of employment polarisation was apparent for the period 1995 to 2007.

Table 4: Hourly pay by Economic Sector (2002-2006)

	Hourly Pay		Employees ('000s)	
	2002	2006	2002	2006
Mining and quarrying	€18.02	€23.09	7.5	10.1
Manufacturing	€16.36	€18.66	261.7	247.8
Electricity, gas and water supply	€23.54	€31.76	11.8	11.2
Construction	€17.06	€20.22	131.5	204.9
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	€12.33	€16.26	205.9	250.9
Hotels and restaurants	€10.76	€12.82	88.5	108.1
Transport, storage and communication	€17.18	€20.92	90.0	96.3
Financial intermediation	€23.02	€25.08	67.1	82.4
Real estate, renting and business activities	€16.99	€19.94	129.4	149.8
Public administration and defence; compulsory social security	€16.63	€23.24	90.1	101.8
Education	€30.27	€36.19	107.0	126.6
Health and social work	€18.05	€22.44	150.7	194.3
Other community, social and personal service activities	€16.81	€16.44	65.5	83.0
Total	€18.52	€20.43	1445.9	1712.0

Source: Eurostat: European Structure of Earnings Survey and Labour Force Survey (earn_ses_agt18, earn_ses06_47, lfsa_eegais) and own calculations.

Note: Pay data refers to NACE Rev 1.1 sectors C-O. Occupations are sorted by 2002 hourly pay rates. Employee numbers derive from the Eurostat Labour Force Survey (lfsa_eegais) with the total figure being for the whole economy. Skilled agricultural employees are excluded due to a lack of data.

4 CHANGES DURING THE RECESSION

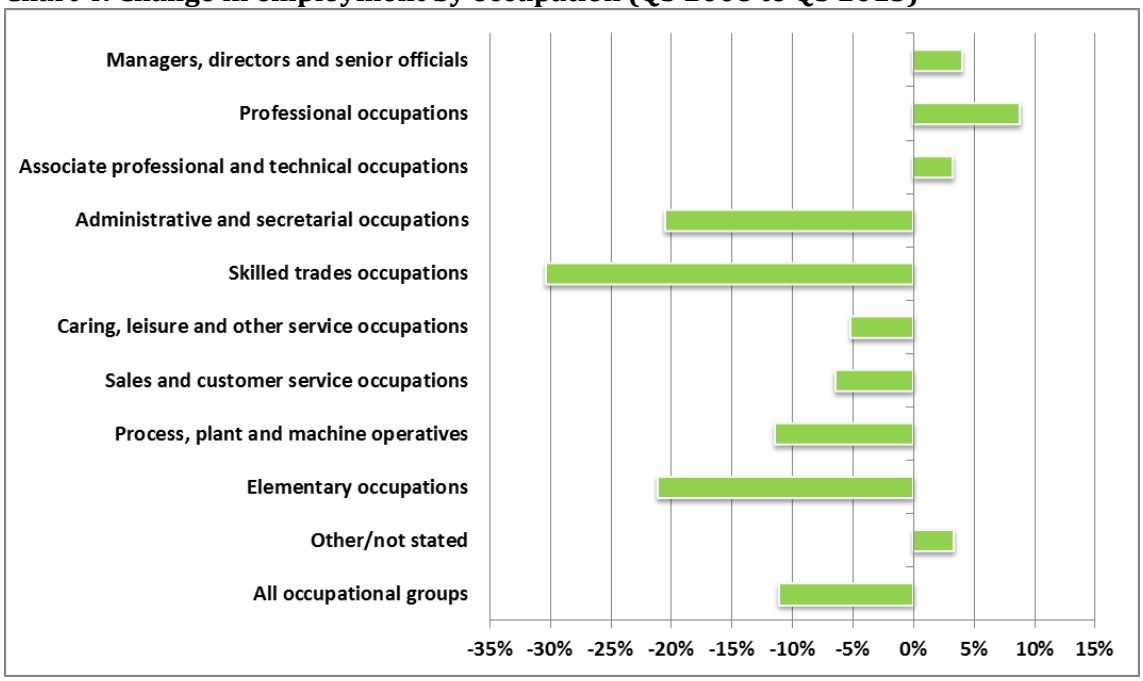
A recession can cause job losses in three different ways. It is commonly understood that unsustainable jobs can be lost due to the bursting of a bubble, or that jobs can be lost due to a general downturn in the economy. There is a third way in which a recession can cause job losses. During a boom firms may be able to ignore new trends in technology or work practices (such as towards computerisation), and stay profitable. However, in a recession the firms that have previously adopted new methods and technologies are more likely to survive, some firms that have not close down, and other firms scramble to catch up with new methods and technologies. The disruptive effects of a recession may stop resistance to underlying trends. The transition to new technologies or work practices does not have to be a smooth process, but can happen in a jolting fashion.

However the local Irish construction boom masked the underlying changes occurring in the economy. Between 2008 and 2010 employment for those at the top was relatively stable, while those in the middle were hit hardest, and those at the bottom also losing employment, but relatively less than those in middle paying jobs. This is as construction jobs tend to be middle paying. This is shown graphically in Chart 4. It should be noted that the data in Chart 4 is not directly comparable the other data on changes in occupation in this paper. One reason is that the data refer to employment rather than just employees (a breakdown was not available). A

second reason is the difference in occupation classification[3]. This change in classification in itself reflects a change in the nature of tasks performed by some occupations. For example, the occupation "Travel Consultants and Organisers" has been merged with "Travel Agency and Related Clerks" (International Labour Office, 2013) which reflects moves to more problem solving tasks as rountine tasks are computerised. Also, breaks in the data occur in 2008 due to a move to a new system of classifying economic sectors (a move from NACE Rev 1.1 to NACE Rev 2). Therefore a direct comparison cannot be made with the data from before the boom. Nevertheless some trends can be seen in the data.

The occupations are ranked according to occupation classification, which approximates average earnings. As can be seen the employment of those in the three top occupations actually increased between 2008 and 2013.

Chart 4: Change in employment by occupation (Q3 2008 to Q3 2013)



Source: CSO: Quarterly National Household Survey (QNQ14)
Notes: Occupations defined as per SOC2010. Data includes employees and self-employed. The occupations are ranked according to occupation classification, which approximates average earnings

The top three occupations (Managers, directors and senior officials; Professional occupations; and Associate professional and technical occupations) have increased their share of employment from 31.7% to 38.8%. While an increase in employment in relative terms could be due to a collapse in the construction bubble, or cyclical factors (during recessions the lower paid are more likely to lose their jobs (see Devereux, 2004)). The fact that the increase is in the number employed, and not just the share of employed shows that this is due to the long-term underlying shift in the Irish economy, and not just due to the recession. Also, it is implausible that the shift is due to a change in the supply of such workers. The limited data on wage developments is also supportive of it being driven by a change in demand. However, the increase in employment of 41,200 in these categories is not enough to offset the fall in other

[3] This is due to a move from ISCO88 to UK SOC2010 which is compatible with ISCO08.

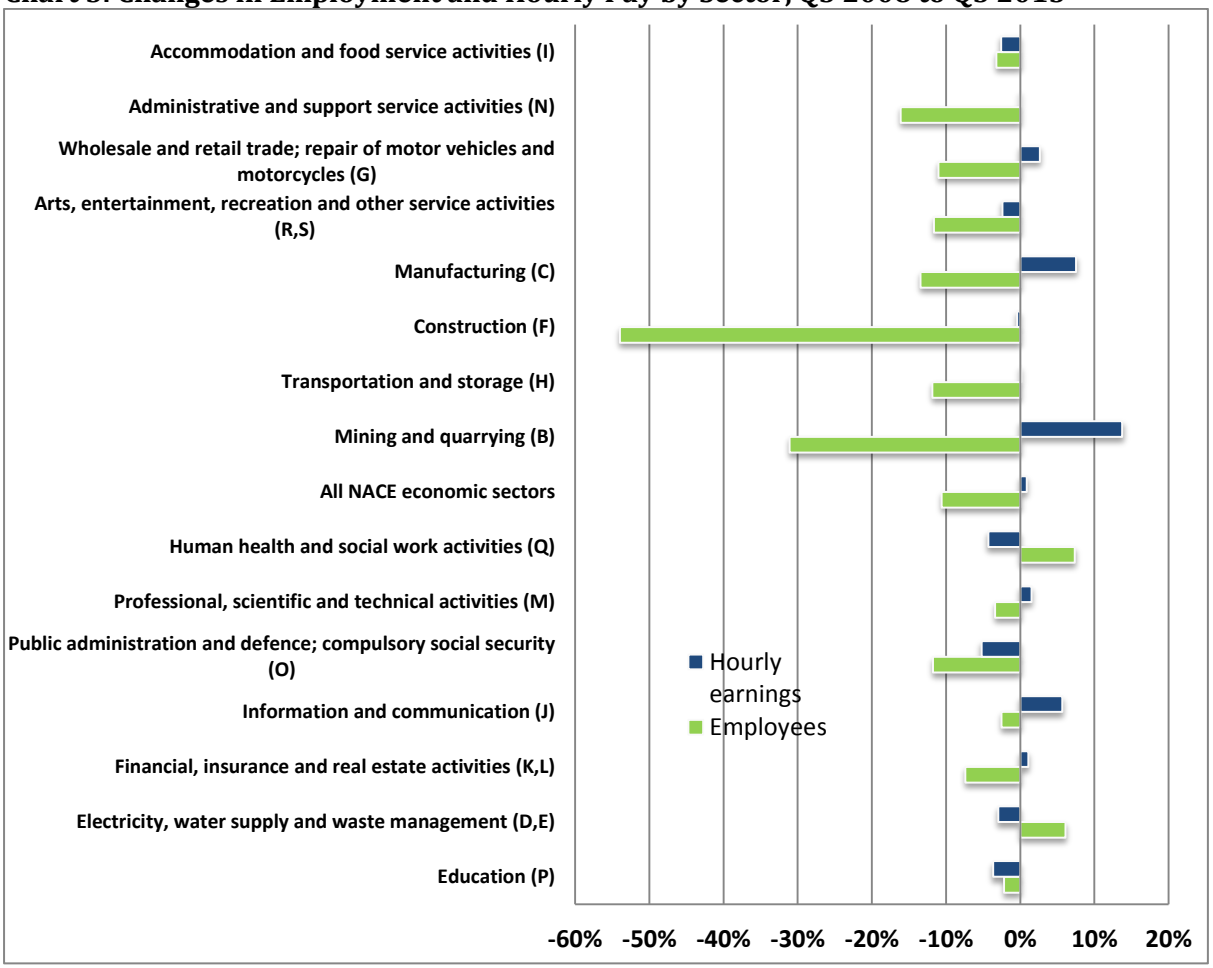
sectors. Unsurprisingly, the occupation with the largest fall in employment is the 'Skilled trades occupations', which includes many construction workers, and the decline in employment is largely due to the bursting of an unsustainable bubble. Part of the decrease is also due to cyclical factors. Across Europe in 2012 7.2 per cent of those in employment are employed in the construction sector (compared to 4.7 percent in Ireland), and a recovery of employment to this level can be expected. This would mean job growth in the sector of roughly 50,000 to 60,000 jobs.

It is notable that secretarial and clerical employment suffered heavily, with 20% of such jobs being lost (compared to 11% for the economy as a whole). This shows that the decline in this occupation group is due to more than just the recession, but it represents the unmasking of a long-term trend. According to the de-routinisation hypothesis of Autor et al. (2003), it is such jobs that are most easily computerised or outsourced. In contrast, sales and customer service jobs fell by 11,000 (about 6% of such jobs) and the decline can be attributed to the recession. Unfortunately accurate information on changes in hourly wages by occupation is unavailable. However, CSO data from the Earnings Hours and Employment Costs Survey (EHECS) shows that in nominal terms weekly pay for the top three occupation groups increased by 4% from the second quarter of 2008 to the same period in 2013, decreased by 6.7% for Production, transport, craft and other manual workers, and decreased most (by 8.2%) for Clerical, sales and service employees (CSO, 2013a). It should be noted that part of the decrease is due to a decrease in working hours rather than hourly pay, but the data is consistent with a fundamental shift in demand away from middle paid clerical and administrative jobs.

This evidence of the recession unmasking an underlying trend of polarisation is also supported by evidence from Eurofound (Hurley et al., 2013). Excluding the construction sector, the period 1995 to 2007 showed a pattern of polarisation, with the greatest job gains for those in the top 20% (in terms of wages) with the second biggest gains for those in the bottom 20%. For the period 2008 to 2010 the bottom 40% suffered the greatest job losses. So this could be a combination of the long term loss middle paying clerical jobs, and also the more temporary loss of low paid service sector jobs due to the general down turn in the economy.

Although the sectoral data is not directly comparable with the construction boom era, the changes by sector also provide some insights. As can be seen changes in average hourly pay have been smaller in magnitude than during the boom period. This is reflective of a both the fact that wages tend to be rigid downward (see for example Babecky et al., 2010), and the low levels of inflation (with Q3 2013 price levels being roughly the same as in Q3 2008). Unsurprisingly, the three sectors that have shown the greatest wage declines are those that are dominated by the public sector (Public administration and defence, compulsory social security; human health and social work activities; and education). The pattern since the onset of the recession is consistent with a pattern of polarisation, combinded with the effects of a burst construction bubble. The low paid accommodation and food sector showed below average declines in the number of employees showing that the increase in demand for such services during the boom was persistent. Apart from sectors related to construction (such as mining and quarrying; and the construction sector itself) employee numbers are down in the Administrative and support service activities sector. Again this is in line with the de-routinisation hypothesis. That pay in lower paid sectors is largely influenced by institutional factors can be seen by the fact that wages have fallen in the accommodation and food service activities sector in which a large number of workers were covered by terms negotiated as part of a Joint Labour Committee.

Chart 5: Changes in Employment and Hourly Pay by Sector, Q3 2008 to Q3 2013



Source: CSO: Earnings and employment costs survey (EHQ03) and own calculations.
Note: The sectors are sorted by hourly pay prevailing in Q3 2008.

5 CONCLUSION

There are three factors that explain the change in the labour market in Ireland during the recession 1) job losses due to the general downturn in the economy, 2) a once-off adjustment due to the bursting of a construction bubble, and 3) a long-term underlying shift that is hollowing out middle paying jobs. The policy implications differ depending on the cause of the job losses. For jobs that are lost due to the general down-turn in the economy (such as in retail and hospitality) a recovery in employment can be expected as the economy as a whole recovers. In particular, many lower paid jobs depend on a recovery in the domestic economy. Hopefully this will occur if austerity policies are reduced over the coming years.

For the other two causes, more long term structural policies are required. It is likely that construction employment has undershot a balanced level of employment. An investment stimulus (such as that proposed in NERI, 2013) would help to restore construction employment to a sustainable level, and help reduce structural unemployment caused by 'hysteresis effects' (whereby long-term unemployment corrodes a workers skills, and makes it more difficult for them to find employment). For other former construction workers, retraining for potential

growth areas of the economy is required. Many construction workers that have an aptitude for working in technical occupations or pursuing further education were attracted to the construction sector by the good opportunities then available. Complementary to the general upgrading of unemployed and under-employed former construction workers is the need to up-skill those in clerical and administrative occupations. As the loss of such jobs are due to long term trends, a strong recovery of such jobs is not likely, and continued job losses can be expected into the future. While much focus has been put into retraining unemployed workers, thought should be put into forming a national training programme for those currently in employment. Government policy should focus on normalising continuous training. Government could subsidise training during working hours, rather than rely on night-courses, in order to train people for upcoming challenges in the labour market.

The effect of government industrial policy on the demand for different types of labour should not be ignored. Current government policy is one of promoting export orientated growth. Export orientated firms tend to employ higher skilled and higher paid workers. While this is welcome, industrial policy should also be examined in light of how it could promote other middle paying jobs, with a strong link between training policies and industrial policies likely to be beneficial. It is impossible to predict what trends in technology will occur in the future. It is possible that new jobs (such as web design) may emerge as middle paying jobs. However, even if this is to occur, training will be required so that people are in a position to take up such jobs.

As a domestic led recovery is not likely over the coming years it is probable that there will be a continued expansion of employment for the higher paid, stagnation or declines for those in middle paying occupations, and the fate of the lower paid will depend on a trickle down from those in higher paying jobs.

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APPENDIX Table A1: Hourly pay by broad occupation and sector (Q1 2010)

	Managers	Professionals	Technicians and associate professionals	Clerical support workers	Service and sales workers	Skilled agricultural, forestry and fishery workers	Craft and related trades workers	Plant and machine operators, and assemblers	Elementary occupations	Total
Mining and quarrying	€31.12	€23.39	€31.36				€25.44	€24.44		€25.28
Manufacturing	€31.38	€25.47	€22.18	€16.49	€17.23		€18.55	€17.31		€20.39
Electricity, gas, steam and air conditioning supply	€39.75				€25.68					€33.39
Water supply, sewerage, waste management and remediation activities	€19.90	€18.32	€19.48	€14.33	€13.22		€19.90	€16.09	€15.12	€16.85
Construction	€24.95	€24.93	€21.66	€15.69	€14.58			€15.46		€18.86
Wholesale and retail trade; repair of motor vehicles and motorcycles	€22.60	€28.05	€16.84	€14.28	€12.85	€14.22	€14.76	€14.42	€13.28	€15.97
Transportation and storage	€23.06	€25.77	€29.38	€17.43	€16.47		€22.94		€17.32	€18.90
Accommodation and food service activities	€17.91	€16.21	€13.65	€13.19	€11.83		€12.42		€10.51	€13.53
Information and communication	€35.41	€25.89	€22.12	€15.51	€19.64		€24.84	€19.34	€17.50	€23.98
Financial and insurance activities	€46.87	€32.26	€26.64	€20.32	€20.61					€30.09
Real estate activities	€26.49		€22.47		€14.95	€10.31				€19.95
Professional, scientific and technical activities	€34.93	€24.75	€22.08	€15.67	€16.55	€15.55	€20.75		€11.43	€22.49
Administrative and support service activities	€25.26		€17.88		€13.98	€11.86	€15.76	€14.38	€10.69	€16.92
Public administration and defence; compulsory social security	€43.45	€32.25		€19.50						€24.41
Education	€40.69	€43.62	€26.99	€21.74	€17.12				€16.92	€33.12
Human health and social work activities	€30.29	€29.09	€22.41	€18.60	€16.03			€15.70	€17.19	€21.72
Arts, entertainment and recreation	€20.73	€22.52	€21.41	€13.86	€11.44			€11.92	€12.63	€17.11
Other service activities	€27.20	€22.74	€18.65	€16.89	€12.62			€11.36	€11.45	€16.46
Total	€28.66	€31.85	€22.86	€17.57	€15.16		€18.71		€14.52	€21.64

Source: Eurostat: European Structure of Earnings Survey 2010 (earn_ses10_47)
Notes: Red colouring refers to low paid jobs, while green refers to relatively high paid jobs.
The values represent mean hourly pay.

APPENDIX Table A2: Average hours worked per week, Q1 2010

Sector	All employees	Managers, professionals and associated professionals	Clerical, sales and service employees	Production, transport, craft and other manual workers
All NACE economic sectors	31.0	33.0	28.4	32.7
Mining and quarrying (B)	38.3	37.2	35.8	39.2
Manufacturing (C)	35.9	37.1	34.3	35.8
Construction (F)	35.5	37.4	29.3	36.6
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	29.4	36.6	26.6	32.7
Transportation and storage (H)	35.6	35.7	32.9	38.0
Accommodation and food service activities (I)	24.9	34.8	23.4	23.8
Information and communication (J)	35.4	37.3	33.7	32.4
Professional, scientific and technical activities (M)	32.3	35.4	28.5	31.0
Administrative and support service activities (N)	29.9	36.2	30.1	27.6
Public administration and defence; compulsory social security (O)	34.9	34.2	35.5	35.8
Education (P)	23.7	23.1	25.7	25.8
Human health and social work activities (Q)	30.1	33.7	26.3	27.6
Electricity, water supply and waste management (D,E)	37.2	36.0	33.9	40.0
Financial, insurance and real estate activities (K,L)	33.2	34.6	31.9	29.7
Arts, entertainment, recreation and other service activities (R,S)	28.3	33.8	27.8	26.0

Source: CSO Statbank: EHECS Earnings Hours and Employment Costs Survey Quarterly (EQH03)
Notes: Red colouring refers to low paid jobs, while green refers to relatively high paid jobs.
The values represent mean hours per week.
Letters refer to NACE codes, the standard EU method for classifying economic sectors.