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New forms of dualization? Labour market segmentation in the
UK from the early 1990s to the late 2000s

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Abstract

This thesis provides a quantitative investigation on issues of labour market divisions, focusing on the UK case between 1991 and 2010. Existing literatures offer a sophisticated account of the theoretical understanding of divisions within labour markets across different welfare states. Especially, amongst others, the most recent literature, termed dualization, has highlighted a dualistic pattern of division not only within the labour market but also in other spheres such as social security settings in many advanced industrial economies. It also emphasises the cross-national variation in the divisions of labour markets. Yet, the existing researches do have their limitations, particularly by the extent to which many studies rely on pre-defined patterns and features of divisions. In other words, rarely do these studies examine how and to what extent labour markets are divided. Rather, they assume that a specific type of division exists in a market and this assumption is applied to measure the extent to which this division can be observed. Thus, this thesis aims to overcome these limitations by investigating distinctive patterns and features of the divided labour market as well as matters concerning the positional stability of individuals of the UK's employed population over the past two decades using advanced quantitative methods (latent class, latent and regression modelling). By investigating the country in which dualization is deemed to be less likely to occur due to its liberal economic structures, the thesis also engages with the role of labour market institutions and their policies.

Results suggest that the UK labour market has been divided over the last 20 years and many socio-demographic indicators, such as gender, age and education, are attributed to the segmentation of labour force. This supports the theoretical literature on labour market divisions in that there are clear distinctions between those who are insiders and those who are not and that there are the contrasting demographics in different labour market segments. However, the clearest deviation from the existing literature is that the main characteristics that divide the groups in the UK labour market are not contract types but rather income levels, occupational profile, and social security benefits stemming from employment. Simultaneously, the divided labour groups indicated have relatively strong levels of positional stability between 1991 and 2010. Such an analytical outcome differs from previous theories' argument that the UK labour market has a flexible labour market structure which promotes frequent mobility amongst the

labour force. In particular, the strong positional stability of the "insiders" regardless of different time points and scales was rather distinctive. Furthermore, of various individual-level indicators, trade unions have shown to be one of the core driving factors to reinforce the divisions in the UK labour market alongside the socio-demographic factors despite a radical reduction within their size and power over recent decades. Therefore, overall findings appear to be consistent with the broader argument of the existing literature on labour market divisions, that the "divides" do exist in the UK labour market. However, it provides less support for the recent suggestion that a specific pattern of division and its characteristics operate neatly across different countries. Such a result highlights the importance of further empirical investigations in order to understand the cross-national variations of labour market divisions.

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Chapter I. Introduction

The division of the labour force has become an important issue across many advanced industrial countries over the past decade. There has been a steep increase in income inequality between workers over the past couple of decades (OECD, 2008, Kolev and Saget, 2010). A growth in atypical and precarious employments, which are often characterised by low-pay, part-time working and contracts of limited duration, has been also observed (Kalleberg, 2009, Vallas and Prener, 2012). According to Standing (2011), a new social class, the *precariat*, is developing where precarious employment statuses are no longer a phase in one's life but a permanent state of employment and income insecurity. Such a division in the labour market is not, however, entirely a recent issue. Since the 1970s, when the full employment model began to erode, there have been an increasing number of studies that have emphasised the trend of labour market divisions particularly linked with widening income inequalities, as well as increasing unemployment levels.

Of various studies, some make a distinction of the dividing pattern between those who are employed and those who are not, initially focusing on the sharp rise in unemployment after the first oil shock in the early 1980s in the US labour market (e.g., 1986, Lindbeck and Snower, 1988). Others look at the division within the employed population, reflecting upon the different levels of security of income and the stability of one's employment as well as the subsequent growing income inequalities, especially in the US and UK labour market (e.g., Reich et al., 1973, Gordon et al., 1982, Goos and Manning, 2003). A more recent literature on dualization proposes a wider concept of the division; i.e., those with a permanent, full-time contract as insiders against those with an atypical contract (temporary and involuntary part-time), or unemployed as outsiders, focusing on continental European countries over the de-industrialisation period (Rueda, 2006, 2007, Emmenegger et al., 2012).

Nevertheless, there has not been much empirical research on measuring the labour market divisions at an individual country level despite the vigorous discussions on the issue of inequalities in the form of various "divides" in the labour market. One of the reasons for this is that there is a lack of comprehensive frameworks available for understanding the variations in labour market divisions across many countries. Most existing empirical studies focus on

particular countries and examine the extent of divisions based on a specific theoretical understanding of labour market divisions. Specifically, the recent empirical literature on dualization primarily concentrates on the growing number of outsiders that are more persistent in continental European countries in comparison to labour market insiders (Palier and Thelen, 2012, Seeleib-Kaiser et al., 2012). While insiders benefit from institutionally sheltered employment with stable jobs, secure income levels and enjoy higher labour protection, outsiders that largely hold atypical employment contracts and are often exposed to labour market vulnerabilities without much labour market protections.

However, in 2008, the OECD published a comprehensive report demonstrating the problems of increased inequality in many OECD countries. This report particularly addresses the danger of "divides" in the labour force from labour market inequality (OECD, 2008). In other words, growing levels of inequality implies that the benefits of economic growth have not been shared equally across all parts of the population and this process may shift towards the segmentation in the labour force. In particular, the UK has been one of the countries where the level of income inequality has been at its highest over the last two decades within western Europe (OECD, 2011). From this, one can expect that the division/segmentation in the labour market might have been developed in the UK with unequal distribution of labour market positions. However, interestingly, the incidence of atypical employment contracts, which has been one of the main indicators to define the extent of divisions in labour markets in recent years, has been relatively low in the UK labour market compared to other European countries. Furthermore, although a number of recent studies examined the labour market divisions incorporating the UK case (e.g. Tomlinson and Walker, 2012, Biegert, 2014), the focus of their analyses is not ideally placed to analyse the distinctive features of the UK labour market. Thus, the empirical evaluations of the existing theories on the UK labour market also remain ambiguous. Such points make the UK labour market an interesting and important case to study with respect of the labour market divisions issue.

Therefore, this thesis aims to empirically explore the divisions in the UK labour market over the past two decades, specifically looking at the employed population. I will attempt to examine whether there have been distinctive labour market divisions in the UK, and if such divisions are similar or different to what is assumed in the existing literature. This will be done through

investigating distinctive patterns of divisions based in the UK context, its extent of stability and the key driving factors that segment the labour market. Since several theoretical literatures including dualization studies have highlighted cross-country differences in institutional settings and economic structure and its varied impact on labour market divisions across countries, I expect that the divisions in the UK labour market may vary from other countries.

First and foremost, in this introduction, I will put the UK into perspective by examining some issues within the European context and discuss why the UK is an interesting case to pay further attention in analysing the issue of labour market divisions. The next section will specifically look at several national levels of aggregate data and analyse the place that the UK labour market is situated within the Western European context with regards to the issue of labour market divisions. Here, I also explain why it is worthwhile to study the UK labour market at an individual country level. In the third section, I go onto examine key research questions asked in this study and provide some brief information on what this would entail. The final section provides the thesis structure and how this will be arranged into chapters.

Growing inequality and the relationship of labour market divisions

In this section, patterns of labour market inequality will be explored across many western European countries over the last two decades and a brief analysis of various forms of precarious labour market positions with respect of the increased inequality will be provided. In particular, by analysing the extent of people who are at a higher risk of labour market vulnerabilities between different countries, it will emphasise that characteristics of labour market divisions and their dividing patterns may not be generalised in 'one size fits all' approach. Thus, further empirical investigations are needed especially in countries where not much attention has been given to these issues in recent years such as the UK.

Figure 1.1 and 1.2 shows a trend of income inequality across many western European countries in recent decades. Figure 1.1 specifically displays the transition of wage gaps between the top and bottom of the earning distribution as captured by the 9th to 1st earnings deciles between 1990 and 2012. Figure 1.2 presents the changes to labour income inequality with the Gini coefficient index among the working age population between 1990 and 2012. Income

disparities are of course only a partial measure of economic inequalities and are based on an imperfect measure of economic resources. Despite these limitations, income is often used as the primary measure that labour market itself uses to explain inequality level.

In general, both figures present an increased pattern of inequality across many developed countries over the last 20 years. However, there are marked cross-country differences with respect to both the extent and timing of this increase. Some countries in particular have experienced greater income inequality than other Western European countries over the last 20 years. Both figures present that the UK has been one of the countries that has experienced a higher level of income inequality than other countries throughout the period of time. Scandinavian countries such as Norway, Sweden and Finland have had relatively low levels of income inequality within western Europe while the pattern of increase has also observed in these countries over the last 20 years. Germany and France are placed somewhere in the middle between the UK and Scandinavian countries. Such variations in income inequality levels implies that in countries such as the UK, where the inequality level has been higher than others countries over time, a deeper divide between those having the income security and those lacking one is more likely to exist.

Figure 1.1. Ratio of gross earning deciles D9/D1 in selected Western European countries between 1990 and 2012
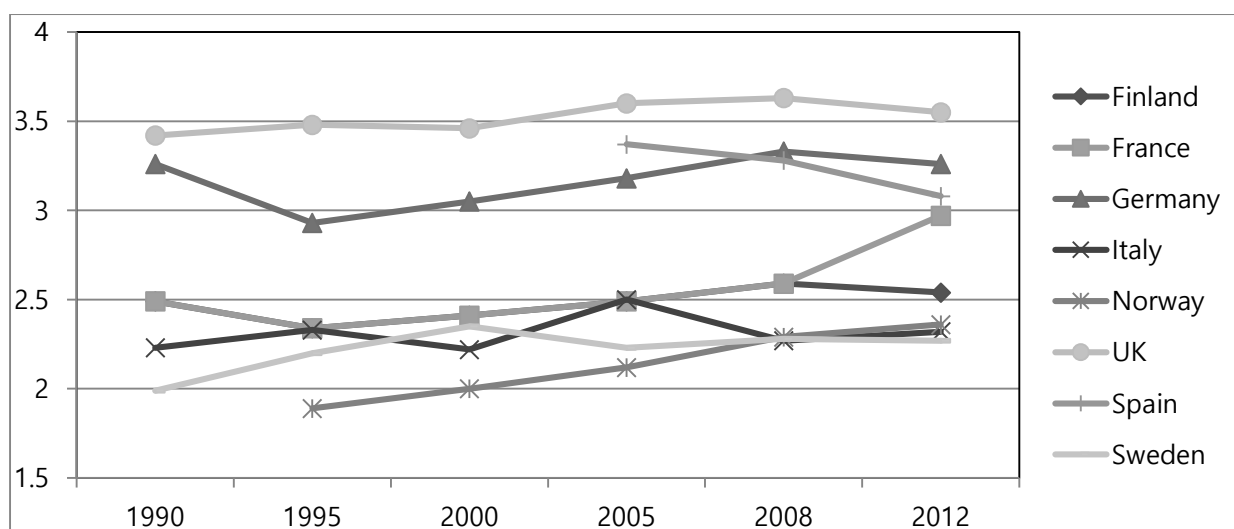
Note: 1) Year 2002, 2004 and 2008 instead of 1000, 2005 and 2009 for Italy
    2) It represents of gross earnings of full-time dependent employees
Source: OECD STAT

Figure 1.2 Labour income inequality with Gini index among the working-age population across the selected western European countries between 1990 and 2012
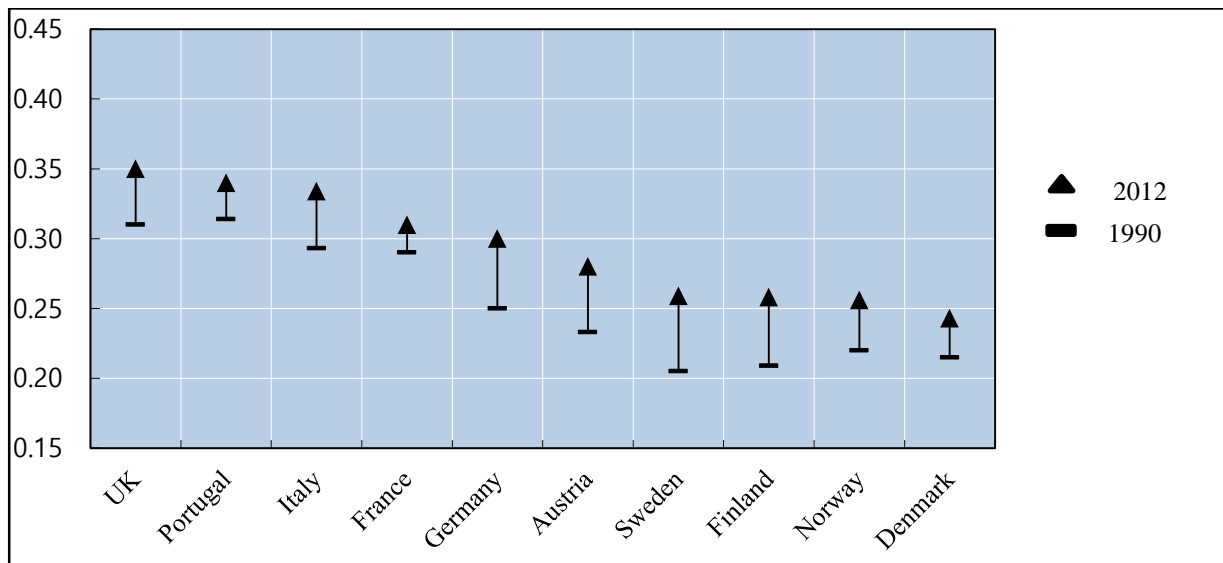
Note: The Gini coefficient takes values between 0 for a perfectly equal income distribution where every person has the same income, and 1 which refers to a situation of maximum inequality where all income goes to one person.
Source: OECD STAT. OECD

Furthermore, many studies argue that one of the reasons in widening the distribution of labour income across many countries is closely related to the expansion of low paid jobs in recent decades (OECD, 2012). This is in part that people in low-paid jobs are at a higher risk of being in vulnerable positions in labour markets due to their income insecurity (Dynan et al., 2007, Shin and Solon, 2011). A number of theoretical literatures such as the dual labour market theory or polarisation theory address the issue of labour market divisions with the growing proportion of low-paid workers (e.g. Reich et al., 1973, Goos and Manning, 2003). Figure 1.3 presents the development of low-paid jobs from a number of Western European countries over the past 15 years. Due to a lack of data availabilities from a majority of countries, 1990 data is omitted. Overall, proportion of low-paid work has increased or remained stable in many countries during the period. For example, the results show that the proportion of low-paid employment in Germany and Scandinavian countries has gradually increased. However, the UK stood as a clear case where the proportion of low paid employment is greater than other western European countries and it remained rather stable over time. This is in line with the higher-level of income inequality in the UK and implies that the large incidence of low-paid employment can be one of the reasons for causing this.

Figure 1.3 Incidence of low-paid jobs in selected western European countries between 1995 and 2012
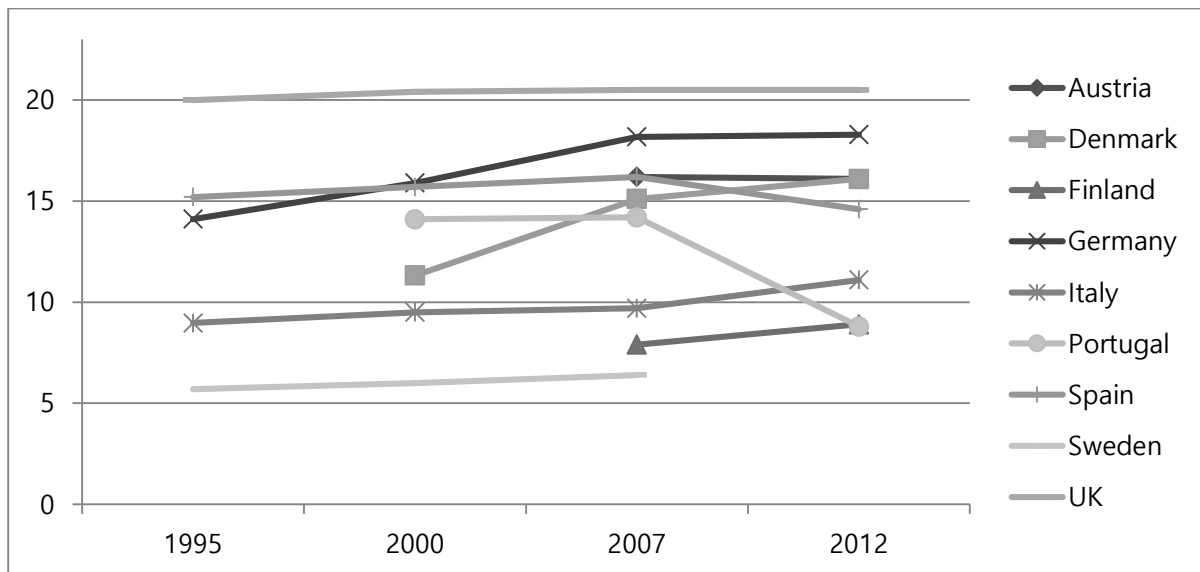
Note:1) OECD definition of low-paid workers is below two-third of gross median earnings of all full-time workers.
   2)Year 2006 instead of 2007 for Italy, year 2002 instead of 2000 for Portugal.
   3) There is no available data for France throughout the period of time
Source: OECD Earnings Distribution Database.

However, many recent empirical literatures on labour market divisions have rarely considered the incidence of low-paid jobs to investigate the extent of labour market dualization. Rather, the dividing pattern has been often defined through different employment contract types (i.e. atypical forms of contracts versus standard employment contract) and/or the extent of unemployment. This can be partly based on the idea that low wage has been wide spread in atypical employments among employees (OECD, 2015). Nevertheless, the incidences of atypical employments differ widely across different countries. Furthermore, the empirical evidence for the link between the dispersion of atypical employment contracts and the extent of low paid jobs is rather mixed. In other words, the incidence of atypical employment does not seem to go hand in hand with the amount of low-paid jobs present in each country.

Firstly, I examine the incidence of temporary employment between 1990 and 2012 across the different western European countries. Figure 1.4 presents the share of temporary employment among a number of western European countries. Overall, there has been an increased pattern in the share of temporary employment in many countries over the last 20 years. In particular,

southern European countries such as Spain and Portugal shared the highest level of temporary employment over the set time period although this proportion in Spain has slightly decreased over the past decade. Temporary employment in France and Germany has also shown an increased pattern while its share is not as large as that of Spain. However, Interestingly, the UK, where income inequality has been higher than other European countries over the past few decades has shared the lowest proportion of temporary employment among the countries analysed. This implies that low paid jobs may not be all characterised by temporary employment or employment contracts with a limited duration. In other words, the employment stability via full-time and permanent employment contract does not guarantee the stability and security of income in some countries.

Figure 1.4 Incidence of temporary employment in selected western European countries between 1990 and 2012
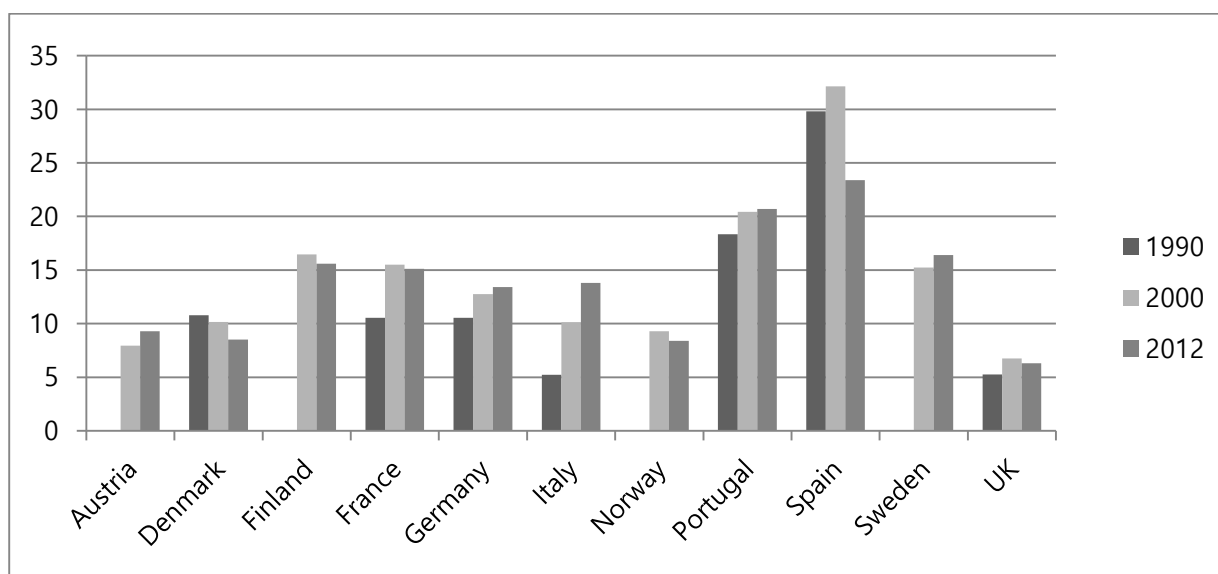
Source: OECD Stat

Note: There is no data available for 1990 in Austria, Finland, Norway and Sweden.

Secondly, the incidence of involuntary part-time employment is examined. Figure 1.5 presents the share of involuntary part-time employment in total part-time jobs across a majority of western European countries between 1990 and 2012. While part-time jobs may provide added flexibility for people who need flexible working hours or time but the situations of involuntary part-time workers are rather different. People who are in involuntary part-time jobs in fact would like to have full-time jobs. This is the one of reasons that a number of dualization

scholars have included involuntary part-timers in the category of outsiders (e.g. Emmenegger et al., 2012, Rueda, 2014). One leading pattern that has emerged from this figure is that the number of involuntary part-time workers has increased in many countries over the last 20 years. Considering the fact that there has been a global economic recession from the end of 2008, such a condition seemingly raises the incidence of involuntary part-time employment more across the European countries within recent years.

However, it is important to reiterate that the scale of these changes and the extent of involuntary part-time employment varies across countries. For example, Spain and Italy have shared the highest level of involuntary part-time employment, more than 60 per cent in total part-time jobs available. Figure 1.5 shows that both countries have also experienced a sharp rise in the share of involuntary part-time employment over time. The share in involuntary part-time employment has also risen in France, Portugal and Sweden and their proportions were relatively higher (around 37 per cent) after Italy and Spain. However, the UK where the incidences of low-pay jobs were significantly sizeable has had again relatively lower proportion of involuntary part-time employment (18 per cent) compared to other European countries over time. This is fairly similar to what has been observed in the incidence of temporary employment. In other words, the level of temporary and involuntary part-time employment in the UK has been relatively lower than other countries although they have experienced large levels of earning inequalities over the last 20 years. This indicates again that in some countries, particularly the UK, the precarious positions in the labour market may not be all captured through the indicators of employment instability but instead identified via income insecurity aspects.

Figure 1.5 The share of involuntary part-time work in part-time employment in selected western European countries between 1990 and 2012
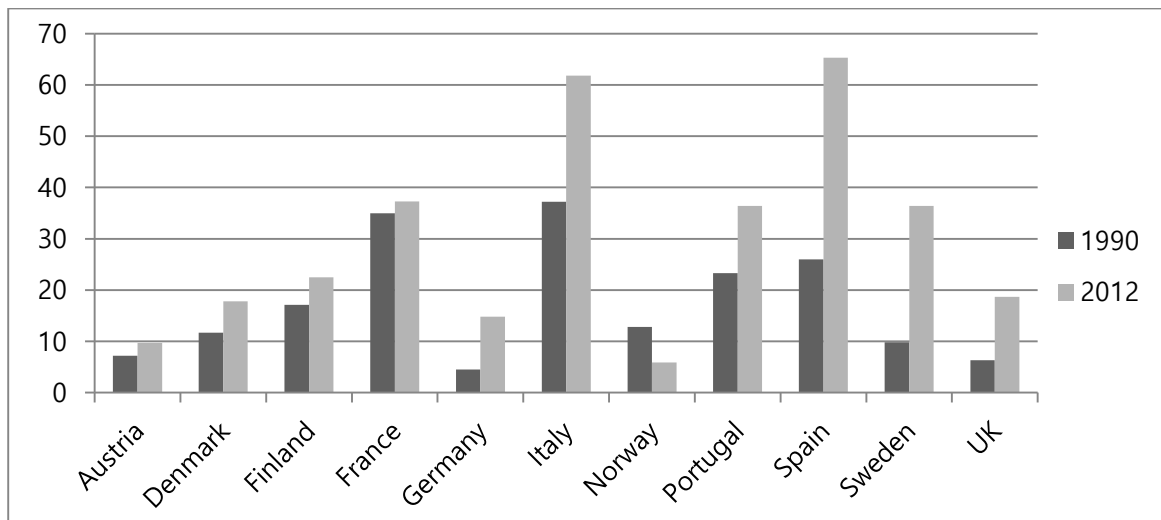
Taken as a whole, many European countries have experienced rising labour market inequality over the past two decades while the scale of increase and the level of incidence have varied greatly across countries. The macro-level data that is presented above also shows that the widening dispersion of labour income and diverging employment statuses tend to mirror the rising inequalities across different countries. Nevertheless, it is important to highlight here that cross-country heterogeneity in labour market divisions seems to be wide, partly reflecting the differences in the occurrence of precarious positions across western European labour markets over time. Such findings imply that patterns of divisions and their extent as well as features of each labour group tend to greatly vary between countries. However, many existing literature, particularly the recent literatures on dualization, have rather focused on the increasing pattern of atypical employment in labour markets to define these inequalities in the form of divisions between insiders and outsiders, particularly among the active labour force. However, the UK where the income inequality has been highest over the last two decades within western Europe has shared a relatively low level of involuntary part-time and temporary employment but rather high level of low-paid employment compared to other countries. It indicates that the unstable employment features may not fully capture the 'outsiderness' of the divisions in labour markets across countries particularly in the UK where the income insecurity and inequality are major components to define the precarious position in the labour market. This means that there needs to be further attention paid in exploring country-specific patterns and features of divisions with

empirical evidence. Especially, little attention has been given to analysing the distinctive characteristics of labour market divisions in the United Kingdom (UK) – which is the focus of this thesis.

The UK is an interesting case as it is one of the countries that the recent literatures have not specifically looked into the characteristics of divisions in its labour market even though it has experienced larger inequalities over the last 20 years. While some literature use the UK as their case study, the focus of their analyses does not lie within examining the distinctive features of labour market division in the UK but rather testing the theoretical framework of dualization as a cross-national comparative research with Germany (e.g. Tomlinson and Walker, 2012, Biegert, 2014). This was partly due to the assumption that the UK labour market would not be divided or dualised as strongly as the German labour market, reflecting the two countries' different institutional structures and labour market settings. The UK is often described as a liberal market economy (LME), which is rather different from the corporatist market economies (CMEs) in continental European countries. The labour market in the UK is based on competitive market arrangements (Hall and Soskice, 2001). Labour market regulations are also less stringent and bargaining structures are based on company level negotiation rather than at a sectoral or country level compared to other corporatist countries (OECD, 1999, Hall and Soskice, 2001, OECD, 2004). This has been one of the arguments that the segmentation in the UK labour market would not be as substantial as other countries. However, considering that there can be cross-national variations in institutional structures and labour market settings, using pre-defined indicators to measure the labour markets across countries may not identify the accurate feature of labour market division across countries. In other words, as discussed, that the level of economic inequality in the UK has been relatively high and the issue of low wage is much more prevalent than other European countries although involuntary part-time and temporary employment have been relatively low. Thus, the commonly used division patterns - such as atypical contracts - may not be applicable when measuring labour market divisions among the active labour force in the UK. This indicates that there should be more research, entailing primarily conducted empirical analysis of labour market divisions at an individual country level considering the differences in the national and institutional settings across countries in order to examine the distinctive patterns and features of divisions. Furthermore, in order to assess the development of labour market divisions and its stability

issue, the analysis with a longitudinal perspective should be more comprehensively conducted.

Aims and objectives of the thesis

The aim of this thesis is to empirically explore the divisions in the UK labour market over the past 20 years, looking specifically at the employed population. Despite the numerous and increasing number of studies on labour market divisions, there is a lack of empirical studies exploring the labour market divisions on an individual country level that reflects each country's distinctive institutional settings and economic structures. In particular, not much attention has been given to analyse the labour market divisions in a liberal market such as the UK compared to other continental European countries. Thus, this thesis first examines whether the UK labour market has been divided into different labour groups and if so I will identify the major indicators to distinguish the features of each group over the last 20 years. Secondly, it explores whether the segmented nature of the labour market has been persistently observed longitudinally. It also examines who are more prone to be included in these labour segments and how the labour groups are different. Using this as a basic framework of research, the following research questions are arrived.

Q1. Can we observe a dualised or divided labour market in the UK and does this pattern mirror the existing theories' arguments?

As noted above, not much research is available that has empirically examined *how* labour markets have divided across different countries. Most recent studies are based on the presumptions that certain employment statuses are the major elements underlying the division in the labour market without providing clear empirical evidence to justify these claims. Thus, the first research question attempts to address this clear gap within the existing literature through identifying the distinctive patterns of labour market divisions in the UK using the application of latent class analysis. Through the analysis, it is able to find how the different labour market segments have been developed in the UK labour market, particularly among the active labour force over the last 20 years and which indicators are most relevant to describe the dividing pattern. Hence, providing the results of this analysis can answer the first research question that to what extent the divisions in the UK labour market are similar to the available

assumptions on labour market divisions within the existing literature. If it is rather different from the arguments of previous literature, it can provide the evidences of cross-national variations in labour market divisions by presenting the differences from the arguments of existing theories.

Q2. What are the mobility patterns of workers in different labour segments over time?

The second research question addresses the positional stability of individuals at each labour segment over time. Most existing literatures emphasise that a limited mobility between the labour segments is a marked feature for explaining the concept labour market divisions. However, not many studies have actually measured the inter-mobility patterns between the existing labour segments. Based on the findings of the first analytical chapter, the second analytical chapter looks at the stability of each labour group over time through a longitudinal format of latent class model, namely latent transition analysis. The results of the analysis provide the transition probabilities of each labour group at each transition time point. In order to compare the extent of mobility based on different time scales and time points, the transition probabilities are measured with three different time scales (i.e. short, mid and long-term period).

Q3. Who has been most affected by labour market divisions over time and what are the main factors to segment the individuals into different groups?

The last research question focuses on examining the main indicative predictors to explain the distinctive nature of divisions in the UK labour market. There have been several studies that provide general and descriptive evidence of labour market divisions. However, these studies are all based on examining the divisions with the pre-defined patterns of division reflected on a specific understanding of the theoretical framework. Since the first research question specifically attempts to measure the distinctive features of labour market division in the UK, the third research question attempts to answer how the newly measured divided labour segments are different by considering the various individual characteristics. Through a multi-nominal regression model, a form of regression analysis, this chapter produces estimates of differences between each labour segment over the last 20 years and examines any changes in this over time in accordance with economic cycles and labour market policies.

Structure of the thesis

The structure of this thesis is as follows. In the next chapter (chapter 2), it reviews the existing literatures on the divided labour force and discusses how it has been conceptualised. The primary aim of this chapter is to provide a theoretical and empirical foundation for the thesis as well as to delineate a rationale for subsequent empirical investigations. The chapter starts with providing an overview of four strands of literature of labour market divisions. It covers both theoretical and empirical analyses of divisions in labour markets and provides critiques of existing empirical literature. This chapter finishes by highlighting a necessity of conducting the empirical analysis, which can capture the distinctive nature of labour market divisions at an individual country level.

Chapter 3 opens an empirical exploration with an investigation into the UK labour market transitions over the last 50 years by analysing the changes in labour market policies and institutional settings. This chapter aims to provide the distinctive characteristics and features of the UK labour market structure and institutional impacts on this before undertaking empirical analysis on the UK labour market divisions.

Chapter 4 concentrates on data, methods and techniques used throughout the three analytical chapters. It outlines the size and scope of the data and provides justifications for using panel data for the analyses. It also describes the methods and techniques used in each analytical chapter and why each analysis is the best option to answer the research questions. However, it is important to note here that this chapter only focuses on the technical details of the methods. The detailed information of the linkages on how each method is to be designed to answer the research questions and how it has been operationalised are further elaborated in each analytical chapter.

Chapter 5, 6 and 7 present the empirical analysis of this thesis. Chapter 5 examines how divisions in the UK labour market have been emerged over the last 20 years and analyses to what extent the patterns of the divisions and the feature of divided labour groups have been similar to the existing theoretical literature including the dualization theory. In the following chapter (chapter 6), I focus on investigating the stability issue of labour market divisions over

time, considering the extent to which the limited mobility between labour segments enlarge the labour market divisions. In other words, this chapter examines the inter-mobility patterns between the labour segments and measure the positional stability of individuals at each labour segment. The last analytical chapter, chapter 7, looks into the relative differences between labour segments by investigating the individual level characteristics and explores how the differing nature of labour market segments can be represented in the UK labour market.

Finally, chapter 8 discusses overall findings and offers a conclusion to this thesis. It summarises the empirical findings and highlight the important outcomes derived across the empirical chapters. It also suggests any implications that may have emerged from the findings with respect to theory, policy and methods. This chapter finishes with outlining some limitations derived from the findings of the thesis and suggests that cross-national comparative research on labour market divisions should be incorporated for future studies and analysis.

Chapter II. Literature review and theoretical and empirical background

1. Introduction

As many advanced industrialised countries have seen a rise in labour market inequality over the past few decades (OECD, 2008), a number of scholars have pointed out that such changes are closely related to the divisions in the labour market, with diverging employment statuses and widening income gaps within the labour force. Also, much of the rise in inequality is partly reflected in the widening dispersion of labour market income as well as the increase in job polarisation in many advanced industrial countries. Particularly, with an ever growing group of people in atypical and precarious employment which are often characterised by low pay, part-time work and contracts of limited duration, Davidsson and Naczyk (2009) argue that the divisions in the labour market are deemed to be a key characteristics of post-industrial societies with increasing inequality. However, the issue of labour market divisions is not a recent phenomenon. Non-homogenous characteristics in the labour market were recognised in the 1960s and a number of theorists have attempted to conceptualise the divided labour market with various terminologies, such as "Labour market segmentation", "Insider/outsider division" and "Dualization".

Thus, this chapter aims to explore the key debates on the issue of the divided labour force, focusing on the existing theoretical and empirical literature. Examining these studies will provide an overview on how and in which context individuals are prone to be segmented into different groups in their respective labour markets. In the first section, I will critically analyse how existing literature defines the development of labour market divisions and conceptualises the pattern and characteristics of the divided labour force. Much literature has highlighted the existence of divisions in the labour market and their characteristics based on theoretical understandings. There are a series of terms and definitions available to address such issues by labour market theorists. Thus, I will examine the similarities and differences of each theoretical framework and their implications. In addition, relevant empirical literature will be reviewed at this juncture, providing evidence of how the theoretical perspectives on labour market division are critically evaluated and empirically tested. This will provide to what extent the previous literature has tried to examine the issue of labour market divisions across countries and their

distinctive characteristics. The next section then analyses the contributions and limitations of the existing theories and highlights the theoretical and empirical questions from reviewing the literature. In the final section, this chapter concludes by suggesting the necessity to conduct further empirical research to gather a clear comprehension of labour market divisions at specific country level. This chapter will also provide evidence of the ways in which this study can contribute to the existing theories on labour market divisions, particularly dualization literature, by investigating the research questions raised in the introduction.

2. Theoretical perspectives on labour market divisions

At its core, the key argument behind the research on labour market divisions originates from the premise that there is not just one competing market but a divided labour market with different labour segments. Focusing on people's different labour market positions, including employment contract statuses, working conditions, promotional opportunities and wage levels, a number of theorists have documented the existence of different labour markets, operated by different labour groups (e.g. Reich et al., 1973, Lindbeck and Snower, 1986). Rising levels of unemployment, atypical employment and low-paid jobs in many countries also suggest that job instability and income insecurity have increased in labour markets over recent decades. By recognising these changes in the labour markets, a number of studies have expressed concern about widening economic disparities between those who are well placed in stable employment with a secure income and those who are not. Such concerns denote that income and employment indices are crucial elements to explain the growing disparities in labour market divisions between those who are well placed and those on the fringes in recent decades. However, such characteristics of the divisions in the labour market are not entirely a new issue. Since the 1970s, when the full employment model began to erode, there have been an increasing number of studies that have emphasised the trend of labour market divisions, particularly linked to widening income inequality and increasing unemployment.

Therefore, this section will review the existing theories on labour market divisions and investigate how the existing literature has defined the divisions in the labour market. I will also critically evaluate the way in which employment and income characteristics have been conceptualised to analyse labour market divisions within the existing literature. It will begin

with a review of the early literature on labour market divisions, dual labour market theory and segmented labour market theory, derived in the 1970s at a time of rising capitalism and the emergence of large corporations. Next, the theory of insider/outsider of labour market will be discussed with the rapid increase in unemployment in the 1980s in many countries worldwide. The polarised nature of the labour market and its theoretical concepts are also explored, particularly focusing on the advancement of technology in the 1990s. Finally, in the most recent literature, dualization theory will be examined with related empirical literature.

Dual labour market theory and the segmented labour market

The theories on the dual labour market and labour market segmentation were initially developed during the 1960s when the dispersion of wages, unemployment and persistent poverty emerged and became important social problems, primarily focusing on the US labour market (Piore, 1970). These theories challenged the assertions of conventional neoclassical economic theory and human capital theory and argued that both the classical and neo-classical theories failed to explain several emerging labour market policy issues (Reich et al., 1973, Gordon et al., 1982). In human capital and neo-classical theory, the heterogeneous nature of workers in the labour market can be explained by the different degrees of human capital accumulations between individuals which result in wage inequality (Becker, 1962, Becker, 1964). In other words, human capital theory rests on the assumption that investment in human capital increases the level of cognitive stock of human capability through educational attainment and skill trainings in work place and consequently determining one's labour market position. Hence, it is argued that different worker' employment conditions and wage levels arises from an individual's human capital attainment.

However, dual labour market and segmented labour market theory questioned the mechanism that explains the direct linkage between the productive capabilities of individuals and their labour market positions. In other words, these theories argue that the emerged social problems, such as the dispersion of wages, unemployment and persistent poverty, are not purely explained by individuals' different levels of human capital investment. Rather, the demand side and institutional factors of labour markets such as industrial organisations, managerial control strategies and labour market regulations are all considered to influence labour market

segmentation (Reich et al., 1973, Gordon et al., 1982).

In terms of the pattern of divisions, the dual labour market theory states that the labour market is divided into two separate markets, namely primary and secondary labour markets, focusing on the fragmented nature of labour markets and different degrees of stability that each job possesses. Thus, jobs in the primary labour market are characterised by stable working conditions, high wages and better promotion prospects, and workers in this labour market are more likely to be protected against external market forces as a result (Bernstein and Hartmann, 1999). However, people in insecure and unstable employments have a position in the secondary labour market. Within this segment, people often face lower wages, poorer working conditions, less training and fewer opportunities for career advancement (Piore, 1975). In other words, while people from the primary labour market are insulated in their positions and enjoy strong employment stability, people from the secondary labour market are less likely to move into the primary labour market due to the barrier that exists between the groups (Doeringer and Piore, 1971, Reich et al., 1973, Gordon et al., 1982). Therefore, the positional stability of individuals in each group is assumed to be strong and the segmentation of the labour market becomes more established over time.

Furthermore, it is important to note that the concept of the dual pattern of labour market segmentation primarily reflects the nature of internal labour markets. Doeringer and Piore (1971) hypothesise that internal labour markets can be defined as a form of structured labour market which is often set in a large corporation with highly structured and hierarchical jobs. Within this system, Reich et al. (1973) remark that people inside of the internal labour market can have significant advantages compared those outside it, due to the structure of the internal labour market. For example, internal labour market jobs are generally filled through internal promotions or transfers. Thus, people in the internal labour market have secure jobs with recognised career ladders in place. However, people in the external labour market often face limited opportunities to move into the internal labour market and hence they tend to remain in a lower position in the labour market. In relation to this, Doeringer and Piore (1971) claim that this distinctive feature of dualistic division is due to the characteristics of jobs rather than the differences in individual worker's attributes from their education and training attainment. Furthermore, emphasis is placed on the institutional nature of internal labour markets that is

strategically developed by employers and firms as devices which increase managerial control over the workforce through the processes of stratification and division (Doeringer and Piore, 1971, Leontaridi, 1998).

Such a dualistic concept of labour market division seems to have further evolved, since this distinctive feature has applied to the industrial sectors and firms. From this theoretical point of view, workers in larger, core sector firms largely enjoy higher wages and profits than smaller firms in the peripheral sector (Reich et al., 1973). This idea rests upon the assumption that the development of capitalism and giant corporations, which were initially formulated in the US, has provided the blueprint for the concept of dual labour market. In a capitalist economy, this model argues that larger scale firms within the core sector often have a higher capital intensity and higher profitability from production, thus workers have higher rates of pay. However, smaller companies from the peripheral sector often face unstable demands in relation with lower capital intensity and relatively strong labour intensive method of production (Reich et al., 1973, Gordon et al., 1982) Consequently, workers from these smaller firms are not able to generate sizeable profits unlike their larger counterparts. As segmentation has emerged not just within a firm but between different sectors and firms, the central idea of labour market duality has further developed into labour market segmentation (Leontaridi, 1998). In short, the segmented labour market literature describes the ways in which economic demand forces and the behaviour of economic institutions have impacted upon pay, employment and the mobility of individual workers, and to outline the characteristics of the divided labour force in different industrial sectors and firms.

Since dual labour market and segmented labour market literature was one of the first to stress institutional factors as the main drivers of divisions, several studies have conducted empirical examinations of labour market segmentation thereafter. Bulow and Summer (1986), for example, show a clear segmented pattern in the US labour market with substantial wage differentials between the primary and secondary market in the 1960s and 1970s. They also argue that industrial policies, such as protecting and subsidizing the high wage/high value added sector of an economy, could provide extra support for workers in the primary sector while those policies reduce the present value of lifetime welfare for workers in the secondary sector. Flatau and Lewis (1993) also emphasise the segmented labour market in Australia with

the strong stability of the divided labour force, using individual level data for a broad range of job characteristics, including wages, employment benefits, general and specific training opportunities and job security.

However, other scholars argue that the neo-classical theory of human capital can be still influential and relevant in explaining people's different labour market positions (Carnoy and Rumberger, 1980, Rosenberg, 1980). Going further, they argue that investments in human capital can increase upward mobility from the secondary to the primary labour market and decrease the segmentation in the labour market. McNabb (1987) and Boston (1990) show that education and human capital accumulation have positive effects on increasing upward mobility in the US and UK labour markets. Such findings imply that the impact of individual characteristics on labour market divisions, especially education and skill levels, is still substantial, while the power of demand side in labour market division is deemed to be one of the most influential factors.

The Insider-Outsider theory of employment

The notion of a divided labour force in insider-outsider theory first emerged after a sharp rise in unemployment in the aftermath of the oil shock in the early 1980s and the persistence of high unemployment throughout the decade. From this situation, a series of 'insider-outsider' literature argued that the labour force is bifurcated with people who have a job and those who are persistently lacking one (e.g. Blanchard and Summers, 1986, Blanchard and Summers, 1987, Lindbeck and Snower, 1987, Lindbeck and Snower, 1988). With the rise in unemployment and subsequently higher levels of long-term employment, the insider-outsider approach focuses its attention on a wage setting system in the labour market which gives different bargaining powers to labour groups in wage negotiation. In this wage negotiation process, the experienced incumbent employees have the market power to keep their jobs and to protect themselves from unemployment. However, unemployed individuals have comparatively limited power and access to represent themselves in such negotiations. Thus, the insider-outsider theory defines the division between the two groups; insiders, representing the incumbent workers and outsiders representing the unemployed. Furthermore, Blanchard and Summers (1986) highlight the role of unions and 'membership rules' that can exacerbate

such divisions of labour. In the unemployed segment, where union membership is more unstable, people continue to have limited market power and hence are less likely to be insiders. By analysing the behaviour of economic agents in markets such as trade unions and the principle of a wage setting system, this theory underlines how the unemployed have little power to protect themselves in the labour market and why the labour market division between insiders and outsiders continues to expand.

The concept of insiders and outsiders is further developed by Lindbeck and Snower in their later study, published in 2001, emphasising labour turnover costs such as hiring, firing and training costs as critical sources of labour division. They argue that it is often unprofitable for employers to employ outsiders due to the fact that firms grossly overspend when replacing insiders with outsiders. In this way, the insiders gain more power and keep their privileged positions through this market mechanism. By contrast, the outsiders face labour market discrimination in that they do not receive an equivalent reward for equal productivity due to labour turnover costs (Lindbeck and Snower, 1988: 182). Furthermore, within the later study of Lindbeck and Snower (2001), the definition of insider-outsider has been modified, particularly concerning the growth of insecure and unstable employment in many developed countries. The notion of the insider has been, thus, narrowed down to those who are in full-time and permanent employment while that of the outsiders has been broadened to people with part-time or temporary employment contracts, i.e., those without employment stability (Lindbeck and Snower, 2001). This suggests that the work on the insider-outsider approach is initially constructed to identify the segmentation of labour market, primarily between the employed and the unemployed, but such a concept has expanded with the recent changes in the labour markets in many countries.

Furthermore, the insider/outsider theory highlights the growth of long-term unemployment as well as the emergence of unstable and insecure jobs that arguably derive from insider-outsider dynamics (Lindbeck and Snower, 2001, Lindbeck and Snower, 2002). In particular, as the emphasis on the dividing line in the insider-outsider model has primarily been placed upon whether people are in or out of employment, the development of long-term unemployment is conceptualised as empirical evidence of strong divisions between the insiders and outsiders. Lindbeck and Snower (2001:174) claim that the outsiders often face a lack of opportunities for

skills training due to the insiders' market power. Consequently, the outsiders' human capital is more likely to deteriorate over time which reinforces further unemployment or the persistence of 'dead-end' jobs. According to this view, limited human capital capacity, combined with job separation records, can also lead to longer-term unemployment or restrict such people to 'dead-end' jobs.

Nevertheless, all insider-outsider models share the common idea that insiders are highly insulated from competition with outsiders via wage setting structures. Moreover, the main focus of the insider-outsider approach is on the identification of the labour segmentation mainly between the employed and the unemployed, specifically emphasising the varying market powers that the insiders and outsiders possess, based on labour turnover costs. Thus, this approach has shed light on explaining the reasons behind the continued marginalisation of the unemployed in the context of increasing unemployment and how this leads to an increase in long-term employment which can create a deeper divide.

Shifting from theoretical arguments to empirical evidence on divisions between the insiders and outsiders of labour markets, Coe (1990) shows the patterns of divisions between insiders and outsiders in relation to their different market powers across a number of European countries, North America and Japan. This study also argues that the different market powers between the insiders and outsiders can substantially contribute to persistent involuntary unemployment. Blanchflower et al. (1990) also examine the bifurcated pattern of division of the UK labour market in the mid 1980s, particularly concerning the contrasting impact of market powers on insiders and outsiders. This study identified that while there is little indication that the behaviour of insiders affects the equilibrium wage rate within the unskilled sector of the labour market, in the skilled and semi-skilled sectors the power of the insiders on wage determination is evident. On the issue of long-term unemployment, Nickel and Layard (1997) report the trend of increased long-term unemployment but with reduced short-term or temporary unemployment in many continental European countries and point out the stronger stability of divisions between the insiders and outsiders. Such evidence supports the theoretical framework on insider-outsider theory, and particularly highlights the precarious position of outsiders in recent decades, emphasised by an increase in long-term unemployment and the rise of 'dead-end' jobs in labour markets in many countries.

The job polarization theory

Similar to labour segmentation theory, job polarization theory focuses on the presence of labour market divisions among the active labour force and within the employment type. However, this theory emphasises the processes of polarisation in the labour market by focusing its attention on the impact of technology, whereas segmented labour market theory highlights the causal relationship of the demand side of the market forces which might influence labour segmentation. Regarding the growing numbers of high-paid and low-paid jobs, but with a relative decline in middle income jobs, this model views technology as biased in favour of jobs involving non-routine tasks (Goos and Manning, 2003, Wright and Dwyer, 2003). In other words, non-routine tasks are complementary to technology; professional and managerial jobs at the high-end as well as unskilled service jobs at the low-end have increased. By contrast, , it argues that there has been a decline in many jobs involving routine tasks since routine tasks can be carried out by machines (Goos and Manning, 2003, Goos et al., 2009). In line with this analysis, Autor et al.(2003) claim that jobs requiring routine tasks tend to be concentrated in the middle level of wage distribution but jobs requiring non-routine tasks are likely to be at both ends of the wage distribution spectrum. Thus, this model argues that the development of technology can impact greatly on the demand for different jobs and can subsequently cause asymmetrical employment growth, which results in an increase at both the high-end and low-end of the job market and a decline in the middle.

Most notably, works by Goos and Manning (2003) and Wright and Dwyer (2003) propose to address this particular pattern of polarisation, focusing on the UK and US labour markets with empirical data. They highlight a sharp decline in the growth of middle level jobs but stronger growth in the highest-skilled (professional and managerial) and lowest-skilled (personal services) occupations, while examining the relations between the development of technology and the process of job polarization in both countries. Several papers also confirm such trends in the US with an increased pattern of unequal employment growth at the bottom and top end of the labour market (Autor et al., 2006, Acemoglu and Autor, 2010, Autor, 2010). Furthermore, Goos et al. (2009) indicate that a similar process of polarization has taken place in many European countries. Such an analysis is intriguing since it may explain the relationship between the transitions in the labour market, specifically related to the development of technology and

the changes in labour demands with the structural changes in post-industrial labour markets. Moreover, it provides an important analytical perspective of labour market changes on the basis of an expanding service-based economy associated with technological changes.

However, it is important to underline here that literature from a range of sources including Eurofound (2008) and the OECD (2010) note that there is a considerable diversity in the expansion of this unequal employment growth at the top and bottom of the labour market in many countries. Holmes (2010) also questions the decrease of employment in middling jobs through empirical research by performing a longitudinal analysis over the past 20 years in the UK labour market. He argues that the largest number of jobs are still in the middle of the wage spectrum despite the development of technology and the decrease in routine task occupations. Such empirical results imply that while the development of technology certainly has an impact on the decrease of routine task occupations in many developed countries, it is not clear that a polarised labour market is the inevitable future across many developed countries, due to the different institutional settings and labour market policies of each country.

Dualization theory

Since increased inequality has become a common problem in many developed countries, the most recent literature on dualization hypothesises that the labour force is dualised into insiders and outsiders, which is built upon the previous concept of insider-outsider theory (e.g. Rueda, 2005, Rueda, 2006, Rueda, 2007, Davidsson and Naczyk, 2009, Häusermann and Schwander, 2009, Emmenegger et al., 2012). However, this theory attempts to transfer this concept into other domains, not only in a labour market setting but also in the area of social policy and political participation (Emmenegger, 2009, Emmenegger et al., 2012). It also highlights the commonly occurred socio-economic changes across many advanced industrial countries in recent decades, such as de-industrialisation and globalisation, and hypothesises that the pattern of this division tends to be wider and/or deeper than previously surmised. In this way, the divide of dualization theory is characterised by the concept of "insiders" and "outsiders" but the theory has a wider capacity to conceptualise each group in a broader context. For instance, insiders are described as people with access to employment based on a standard employment relationship so as to be insured by the labour market, social protection systems and policy

reform. Outsiders are those who must cope with unemployment or atypical employment in the labour market and/or a lower level of social protection coverage as well as limited political representation (Davidsson and Naczyk, 2009, Emmenegger et al., 2012). However, there have seemingly been disputes in defining the characteristics of the insiders and outsiders even within the group. Schwander and Häusermann's (2013) argue that employment contract statuses may not be stable since they can be frequently changed over time. Alternatively, they propose the use of occupational classes with age and gender variables to identify labour market divisions which can represent more stable employment biographies for the workers in each group over their working lives. Biegert (2014) also criticises the use of atypical contract status at any one given time as a proxy to indicate 'outsiderness', in that this approach does not allow for the examination of the mobility patterns into and out of insider and outsider positions. He, thus, looks at transition patterns of workers into insider (permanent/full-time) positions and outsider (atypical employment or unemployment) positions in Germany and the UK using longitudinal data.

This theory also highlights the fact that the dualistic features within labour divisions can be presented at greater degrees of variations in different countries and regimes. According to Emmenegger et al. (2012b), although the structural pressures from socio-economic transitions including de-industrialisation, globalisation and the increase of the female workforce in the labour market have partly influenced the processes of dualization in many advanced industrial countries, institutions and politics are the mediating factors in translating structural pressures on national policies. In other words, different national policies and politics are seen as primary factors that influence the varying levels of dualization in different countries. Thus, they argue that the outcomes of dualization should be understood as policy matters since politics and policies differentiate the divided labour groups. Therefore, different national policies and institutional settings across countries can lessen the impact of dualization, while it can also deepen institutional dualism or even create a new form of institutional dualism. Following this logic, this theoretical approach provides interesting aspects, highlighting that the depth of labour dualization can vary in different countries, heavily influenced by national institutions and policies as well as external factors. In this context, it can be seen that the concept of dualization contains a hybrid combination of the arguments in the existing literature. The structure of the theory is built upon the insider - outsider literature. However, it incorporates

the effects of socio-economic changes on labour market divisions and the importance of demand side and institutional settings, which have been highlighted in job polarization theory and labour market segmentation theory respectively.

In terms of empirical studies, recent literature provides support for the argument that national institutions and policies have an important effect on the varied scales and structures of labour market dualization at a national level (Häusermann and Schwander, 2012, Schwander and Häusermann, 2013). By indicating the different degrees and features of labour market vulnerabilities in different countries and regimes, it highlights the cross-national variations of divisions. From a more macro-political perspective, Bruno and Palier (2012) and Seelieb-Kaiser et al. (2012) examine the relations between changes in the institutional structure of countries and emergent institutional dualization patterns, not only in the labour market but also in the social security system and political arena, emphasising the development of stronger dualization in corporatist countries than in other European countries. Most recently, Biegert (2014) tests the mobility patterns into and out of insider and outsider positions and how they differ in countries with different institutional regimes: Germany and the UK. By comparing these two countries, he comes to the conclusion that the insiders in Germany are in a much more stable position compared to those in the UK, due to the differences in the institutional structures and labour market policies in these two countries. This evidence again highlights that the effect and depth of dualization can vary between countries due to their different institutional structure and labour market systems.

In summary, dualization literature is in line with the existing studies which argue that the problems of a divided labour market go hand in hand with increased inequality in many rich countries over recent decades. Nevertheless, this model attempts to provide a more inclusive perspective in terms of analysing the division issue by applying a wider measurement to conceptualise the divide between insiders and outsiders. In addition, this model attempts to provide a broader outlook by analysing the divisions in the labour market and delivering an insight into the possibility of the many variations in dualization within and across different countries. The empirical literature also highlights that the impact of dualization can affect countries differently due to their respective institutional structures and labour market systems. Thus, at present, such a concept appears to provide the most comprehensive analysis of labour

market divisions.

Summary of theoretical expectations

The brief review above has shown that the literature on labour market divisions commonly agrees that labour markets in many countries are, to some extent, divided or segmented and employment instability and/or income insecurity have often been crucial indicators to measure the divisions in labour markets. However, the theories above have highlighted the notable variations in terms of analysing the concepts, patterns and determinants of divisions. Dual labour market and labour market segmentation theory hypothesise that a dichotomy pattern of division has developed in the labour market over time, named as the primary and secondary segments. They emphasise institutional influences such as industrial organisations, managerial control strategies and labour market regulations upon individual workers' employment, pay and mobility, and focus on the rise of segmentation in the labour market. (Reich et al., 1973, Piore, 1975, Gordon et al., 1982). Insider-outsider theory primarily highlights the division of labour between those in the labour market and those who are not, due to the disparity of market power that these two groups possess (Blanchard and Summers, 1986, Lindbeck and Snower, 1988). Job polarisation theory emphasises the widening gap in employment distribution in many developed countries and focuses on the influence of technological changes (Goos and Manning, 2003, Wright and Dwyer, 2003). The most recent theory, dualization literature, provides a broader perspective in analysing the divisions in the labour market by incorporating recent structural changes in post-industrial labour markets, such as de-industrialisation and globalisation, as well as contextual effects (Emmenegger et al., 2012, Häusermann and Schwander, 2012). It also sheds light on the possibility of varied scales and forms of dualisation in different countries by highlighting the role of national policies on institutions (Palier and Thelen, 2010, Emmenegger et al., 2012). Furthermore, the theory expands on the evolution of dualistic division in various areas such as labour markets, social protection systems and the political realm.

The review also indicates that the divisions in the labour force is not a recent phenomenon within theoretical considerations. The non-homogenous characteristic of the labour force was acknowledged in the 1960s, initially with the persistence of income inequality in the US

(Leontaridi, 1998). Such a concept has continually developed and evolved over time. For instance, dual labour market/ labour segmentation theory and insider-outsider theory were both developed in the US yet at different periods of time, in the 1970s and the late 1980s respectively. The concept of job polarization was initially examined in the US and the UK labour market and was associated with changes in employment distribution in the 1990s. The most recent literature, dualization theory, also underlines the dualistic pattern of divisions in labour markets. However, it is important to note that this dualization model shifted the focus onto continental European countries from liberal labour market countries. This can be linked to these countries' recent labour market-related policy reforms which have subsequently had rather different impacts on the relationship between the inner core of the workforce and more marginal groups. As the dualization approach documents the importance of institutional influences on labour market division, the dualization in the labour market is seen to be more pronounced in these countries. To summarise, the issue of a divided labour force has been explored and discussed since the 1960s. Furthermore, employment conditions and/or income levels have been used to gauge labour market divisions. However, the pattern of divisions and the features of labour segments have been disputed in the existing literature. What is more, empirical evidence in the literature has been rather confined to specific countries based on the theoretical framework in each analysis. Table 2.1 describes and summarises the key features of labour market divisions in the four strands of theoretical literature, presented above, in more detail.

Table 2.1. Theoretical literature on labour market divisions

The name of Theory	Definition/conceptualisation	The drivers of division	The patterns of division	Outcomes of the division
Dual labour market theory/ Labour market segmentation theory	The labour market is presented by two distinct segments; primary and secondary labour market. Dualisatic features have been developed in different industrial sector and firms	Demand side and institutional factors (e.g. industrial organisations, managerial control strategies and labour market regulations)	Core sector (Big, large scale firms) VS Periphery sector (unstable and small firms)	Wage inequalities and limited mobility channel into different segments
Insider-outsider theory	Labour force is bifurcated with people who have a job (insiders) and those who persistently lacking one (outsiders)	Wage setting system and labour turnover costs	Initially, the Employed VS the Unemployed Later, incumbent employees VS the unemployed or people in informal and competitive sectors of labour market	Long-term unemployment and greater inequality
Job polarisation theory	The pattern of employment growth in the labour market is identified with high and low end jobs but the decline of employment in the middling job	Impact of technological progress	An increase in low-skilled service occupations and high-skilled professional and managerial occupations but a decline in the jobs in the middle-level	Curtailed mobility channel, and widening income inequality
Dualization theory	Labour force is on the process of the divergent trajectories in various domains such as labour market, social policy and political setting	National institutions and politics	Standard employment workers (insiders) VS the unemployed and atypical employment workers (outsider)	Inequality in various dimension including labour market, social protection systems and political setting

Table 1. continued

The name of theory	Developing years	Indicator	Example of countries based on theory
Dual labour market/ labour segmentation	The early to mid 1970s and further developed in early 1980s	The degree stability in employment	US
Insider-outsider	The mid to late 1980s and further expanded in early 2000s	Employment status: Employed VS Unemployed	US
Job polarisation	Early 2000s and further developed in late 2000s	Employment distribution	US, UK
Dualization theory	From Late 2000s to now	Employment status: Permanent employment VS Atypical employment and unemployment	Mainly the Continental European countries

3. Contributions and limitations of existing literature on labour market divisions

As discussed, a considerable body of literature has been aimed at identifying the divisions in the labour market over the last few decades within different contexts. In recent decades, much literature particularly underlines the idea that there is not just one competing labour market but a divided labour market with different labour market segments and rising labour market inequality subsequently. In particular, with the increase in atypical and precarious employment and low-paid jobs in many advanced industrial countries, the fragmented nature of the labour market has been highlighted with a widening dispersion of labour market income as well as the deepening of job polarisation. This also indicates that employment/job instability and income insecurity have been key indicators to examine labour market divisions although varying definitions of labour market divisions have been observed by different scholars in different theories. What is more, the possibility of cross-national variations in labour market divisions have been addressed within more recent literature on dualization in relation to the different institutional and market contexts of the countries under scrutiny. Many studies have also examined the issue of labour market divisions with empirical data to test the prevailing theoretical assumptions.

Broadly, then, the vigorous discussion on labour market divisions produces valuable insights into the process which gives rise to segmented labour markets in many developed countries. However, there still appear to be limits in various areas in these existing studies. First, there seems to be a lack of evidence on the examining the actual patterns of labour market divisions in different countries. While cross-national variations in divisions are acknowledged (e.g.Emmenegger et al., 2012, Häusermann and Schwander, 2012), most studies tend to use pre-defined patterns and characteristics of market division based on a theoretical understanding of the issue. It is often derived from the presumption that certain employment statuses – e.g. unemployed, part-time, temporary employment contracts, and low profile of occupations – are the major factors which underpin the division in the labour market, without providing clear empirical evidence to justify these claims. They use these definitions to examine *the extent* to which divisions exist (Rueda, 2006, 2007, Häusermann and Schwander, 2012, Biegert, 2014) or the *stability of* the segmented groups in certain countries (Blossfeld and Mayer, 1988, Biegert, 2014). However, little research is undertaken to empirically examine *how* labour

markets are divided across different countries. However, most empirical studies on labour market divisions focus on specific countries, without addressing the limitations of applying one single definition of labour market divisions to different countries. All studies mentioned still rely heavily on a theoretical assumption of the divisions in the labour market rather than any empirical investigation as to which factors can best define existing patterns of division. This is especially problematic when we consider the fact that labour market division patterns in one country may not necessarily reflect division patterns in others.

Linking to the first point, another area that needs further attention is the variation in the patterns of labour market division between countries. Many studies agree that there are differences as to definitions of 'insider' and 'outsider' status, and thus as to who belongs to each segment, across countries (Esping-Andersen, 1990, Davidsson and Naczyk, 2009, Häusermann and Schwander, 2009, Häusermann and Schwander, 2012). However, most empirical studies on labour market divisions mainly focus on specific countries based on theoretical expectations. For example, the recent literature on labour market dualization brings attention to corporatist countries such as France and Germany due to their increase in atypical employment and unemployment since the 1980s (Palier and Thelen, 2010, Seeleib-Kaiser et al., 2012). However, similar evidence for other countries is still lacking, and few studies systematically examine labour market divisions in a way that allows for an exploration of country-specific patterns and features of divisions with empirical evidence. For example, little attention has been given recently in analysing the distinctive characteristics of labour market divisions in liberal markets like the UK – which is the focus of this thesis.

Furthermore, there is a lack of empirical evidence to examine how patterns of divisions in the labour market have developed over time. According to Lindbeck and Snower (2002), the patterns of division in the labour market can change over time, and thus a certain degree of flexibility should be applied in identifying the feature of division over time. The dualization literature also emphasises the growing level of division between insiders and outsiders in the labour market over the past decade. Yet, there are a limited number of studies that actually evaluate this growing gap between the divided labour force using quantified empirical data over a long-term period. Schwander and Häusermann (2013) also point out the importance of a longitudinal approach of study to measure dualization in the labour market. Thus, they use

occupational classes to elaborate individuals' long-term employment trajectories but with cross-sectional data. This suggests that there remains a dearth of (recent) longitudinal empirical studies that focus on examining how division patterns have evolved over time and exploring the proportion of each labour segment over time.

Furthermore, much of the existing literature assumes that divisions in the labour market remain persistent over time. This is especially thought to be so since there is a limited chance of mobility between the labour segments due to the barriers between the divided groups (e.g. Reich et al., 1973, Lindbeck and Snower, 1988). What is more, the recent literature on dualization suggests that the barrier constructed between the insiders and outsiders has become more difficult to break through compared to the 1980s (Emmenegger et al., 2012, Häusermann and Schwander, 2012). However, few studies empirically track the transition patterns of individuals between the divided groups over time. Rather, the studies that look at changes over time focus mostly on the changes in institutional arrangements or labour market policies that affect the divisions in the labour market (Palier and Thelen, 2012, Seeleib-Kaiser et al., 2012). Other studies have examined the proportion of workers in the outsider markets in certain countries over time (Eichhorst and Marx, 2011). To the author's knowledge, there is only one very recent study that explores the transition patterns between insiders and outsiders, focusing on the UK and German labour market (Biegert, 2014). Yet, the study did not consider that patterns and characteristics of divisions in Germany and the UK may be different in relation to their varied national institutions and market structures. This point again highlights the importance of analysis which explores country-specific patterns of divisions and their stability over time. This indicates that further investigation is needed to examine: firstly, the distinctive patterns of labour market divisions at individual country level exist and secondly, the mobility patterns of individuals in labour segments with a long-term perspective.

Lastly, many studies emphasise that the different institutional structures between countries and their changes may provoke a shift in the nature of labour market divisions (Palier and Thelen, 2010, 2012, Seeleib-Kaiser et al., 2012). Earlier, Esping-Andersen (1990, 1993) points out the cross-national variance of 'outsiderness' in labour markets. He reflects on the various welfare and labour market institutional settings across different countries and draws attention to the important role of national institutions. Additionally, the institutional arrangements of nations'

political economies have often been referred in order to construct different arguments concerning market economies in developed economies (Hall and Soskice, 2001). This indicates that different countries' institutional settings such as policies on the labour market, industrial relations and labour market situations have been assumed to be one of the most influential factors in the study of labour market divisions. However, many recent empirical studies, particularly in dualization theory, have preferred to focus on German and other continental European country cases which emphasise their institutional arrangements of 'corporatist' system and conservative welfare state (Palier and Thelen, 2010, 2012, Biegert, 2014). In other words, there is another gap in the empirical literature in labour market divisions in terms of how the institutional context has an impact on labour market divisions in other countries including the UK labour market.

4. Conclusion

There has been a great deal of interest in the issue of divided labour markets over recent decades, especially with the increase in income inequality and the rise of atypical and precarious employment in many advanced industrial countries. This chapter has sought to review the theoretical and empirical literature on the divisions in labour markets and how these studies have conceptualised and analysed such issues. Much literature focuses on the fragmented nature of labour markets in many advanced industrial countries and highlights that the security of income and/or stability of one's employment can be important indicators for measuring the divisions in labour markets. In addition, many studies have examined the issue of labour market division theoretically with empirical data.

However, the way in which labour market divisions are defined, and the processes incorporated, vary in the existing literature (Davidsson and Naczyk, 2009, Rueda, 2014). At present, most studies assume that a certain type of division exists in the market based on an understanding of a specific theoretical literature and apply this assumption to measure the extent to which this division can be observed. Thus, there has been little empirical research which actually looks at how labour markets are divided and to what extent these divided groups are stable over time at an individual country level. In other words, relying on the theoretical definition of division patterns and the characteristics of each labour segment provides limitations in terms of

capturing varying patterns and characteristics of labour market division across time and space, i.e., countries. Furthermore, in this way, it is more difficult to analyse the relations between each country's unique economic and institutional settings and the divisions in the labour market at an individual country level. This can be one of reasons that there has been little recent empirical information or evidence of labour market divisions in the UK. However, as argued in many studies, particularly dualization theory, the different characteristics of national institutions and policies can shape the different features and scales of dualization (Emmenegger et al., 2012, Häusermann and Schwander, 2012, Schwander and Häusermann, 2013). This provides an interesting point of research due to the fact that the UK has rather distinctive institutional settings with liberal labour market structures, although it is one of the countries where the extent of labour market inequality has been large and stood at its highest over the last two decades within Western Europe. This thesis, thus, aims to address these gaps through an empirical investigation of labour market divisions, focusing on the UK labour market, and to contribute detailed but new empirical evidence derived from empirical analyses.

Therefore, the next chapter focuses on how and to what extent the UK labour market has transformed over the last 50 years by investigating recent labour market policy changes and institutional settings before discussing the major findings from empirical analyses. The chapter also highlights the changes in labour market regulations as well as employment protection measures in the UK and how they may influence on the divisions in the UK labour market.

Chapter III. Labour market in the UK and policy context

1. Introduction

The UK is often described as a liberal market economy (Hall and Soskice, 2001), in other words, that the national political economy is based on competitive market arrangements. Compared to other corporatist countries, UK labour market regulations have been less stringent and the state has had a limited spending approach (Robinson, 1999). In this context, it may be expected that such characteristics in the UK labour market have had a substantial effect on the use of a flexible labour force, increasing non-standard employment and the subsequent development of labour market segmentation based on (the) different contractual employments. However, as briefly discussed in chapter 1, the level of involuntary part-time and temporary employment in the UK has been relatively low over the last few decades compared with many other EU countries (Edwards, 2006; Venn, 2009). One of the reasons behind the low number of atypical employment in the UK is that the UK has relatively low levels of employment regulation for all types of employment including standard forms of employment (Robinson, 1999). This is rather different from other corporatist countries where strict employment protection regulations for permanent employees have encouraged employers to make use of temporary and part-time contracts (Gregg and Machin, 1994, Dolado et al., 2002, Davidsson and Emmenegger, 2013). In other words, employers in the UK do not have the same incentives as in corporatist countries to use non-standard forms of employment. This indicates, to some extent, that the pattern and characteristic of labour market development in the UK can be represented with relatively different features from that of other European countries. The pattern of divisions might be deviated from different types of employment contracts, often seen as the typical pattern of the labour division in continental European countries (e.g. Rueda, 2006; Rueda, 2007; Häusermann and Schwander, 2009; Davidsson and Naczyk, 2009; Emmenegger et al., 2012; Rueda, 2014).

On the other hand, the UK is distinctive in the rise of income inequality that is observed over the past few decades. The UK has been noted as a country that experienced a more rapidly increasing level of earning inequality than any other OECD country since 1975 as well as a larger difference (27 times) of income scale between the top and bottom 10 per cent of the

population (OECD, 2011). This means in a way that the wage in the bottom of the scale has not relatively increased fast enough to the growth of wage in the top. While such a result tends to be driven by a number of factors, the decentralisation of wage policy and collective bargaining from the 1980s has been noted as one of the influential factors which serves to exacerbate the widening income gap. In other words, workers at the upper end of the labour market are trapped in a 'virtuous' circle of recurrent employment in good jobs, whereas workers at the lower end of the occupational hierarchy are in the low value-added service sector or are unemployed (Bradly et al., 2003). Hence, the results show in a way a strong segmentation in the labour market which underlines the social exclusion of workers at the lower end of the wage hierarchy. In fact, one of the most prevailing problems within the UK labour market is the size of in-work poverty, with low wages in general (Bennett, 2014). A recent report from the Joseph Rowntree Foundation (2013) highlights that two-thirds of people in low-paid jobs are in poverty.

Nevertheless, as a prototype of the liberal welfare state (Esping-Anderson 1990; 1999), the welfare services in the UK are rather limited and they are mainly based on means-testing. State provision is focused on labour market disadvantages (Esping-Anderson 1990;1999). Employer-provided benefits, such as occupational pensions are, thus, expected to supplement and complement welfare provisions (Seeleib-Kaiser et al., 2012). However, the coverage of occupational pensions has been far from universal and those excluded from occupational pension coverage have largely been employees/workers with low and interrupted earnings (Alcock et al., 2008). This means that people in low-paid jobs are at risk of the trappings of poverty despite being in employment but are also exposed to possible exclusion from any social protection of future income sources.

However, as discussed in the previous chapter, the divisions in the UK labour market have not been thoroughly examined in recent studies, including dualization literature, despite its distinctive but rather different characteristics from that of other continental European countries. Thus, before undertaking an empirical examination of the divisions in the UK labour market, this chapter explores how and to what extent the UK labour market has transformed over the last 50 years, investigating recent labour market policy changes and institutional settings which might have influenced to the divisions in the UK labour market. Firstly, the scope of

employment protection legislation in the UK and its changes in comparison with other developed countries will be examined in order to view the employment protection measures in place. From this, the changes of employment protection regulations in the UK and their impact on individual workers' labour market situations will be explored. In the following section, I will further discuss the collective bargaining aspect of the UK labour market, reflecting the changes in trade union density measuring the relations between employers and groups of employees for regulating working conditions. As trade unions have decreased significantly in influence since the 1980s, it is important to look at such changes and their impact on the workforce in relation to collective bargaining. Section 3 discusses the condition of part-time contracts and changes in relevant regulations. The share of part-time employment in the UK has been higher than in other European countries over the post-war period which is rather different from the share of temporary employment. From this, I will analyse its distinctive characteristics of part-time employment in the UK labour market as compared to other advanced industrial countries and associated policy changes. In section 4, I will look at the changes of wage settings in the UK labour market since they can directly affect the income levels of individual workers, particularly those at the bottom of the wage scale. Section 5 discusses occupational pension aspects and relevant policy changes. The occupational pension has been one of the major social protections for an individual worker's future income source and therefore its coverage can directly link to the future income security a worker can gain through his or her employment. By examining such aspects that have directly or indirectly impacted on employees' employment and income conditions, an evaluation of the reasons behind the divisions in the UK labour market will be possible. Finally, I will summarise the key aspects in the transition of the UK labour market and subsequent policy changes and draw a conclusion from my findings.

2. Changes in employment protection systems and labour market regulations

Employment Protection Legislation (EPL)

Employment protection legislation (EPL) consists of rules and procedures that define the limits of capacity for companies to hire and fire workers and the use of temporary workers in the private employment relationship (OECD, 2004). As with most labour market policies, the EPL

was initially introduced to protect employees' working conditions and welfare, such as providing security against unfair dismissal (OECD, 1999). Thus, the legislation that protects employees can increase the stability of existing jobs and strengthen the commitment of workers to their firm, but it can also have a negative impact on employment of outsiders if the regulation is overly strict. (Belot et al., 2007, OECD, 2013). In particular, much of the variation in employment protection is observed in cross-countries; thus, the literature on EPL addresses the many different effects of EPL in different countries (e.g. OECD, 1999, OECD, 2004, Venn, 2009).

Unlike the liberal market economy which characterises the UK today, by the end of the 1970s the UK labour market was underpinned by a Keynesian economic strategy (Deakin and Reed, 2000, Taylor-Gooby, 2007). A number of economic and market policies were developed based on a demand management strategy through generous public standing and investing and introducing direct regulations of employment to protect workers in the labour market (Kerfoot and Knights, 1993, Crompton, 1999). However, under successive conservative governments between 1979 and 1997, particularly under the Thatcher government, a number of measures were introduced to deregulate the labour market. Employment protection diminished more rapidly in the UK than in any other European country during the 1980s and 1990s. The period of service to claim unfair dismissal was changed from six months to one year in 1979 and to two years in 1985 for full-time employees (Deakin and Reed, 2000, Kim and Kurz, 2001). Such changes provided employers with a significantly extended margin to fire workers on standard/permanent contracts without extra cost. From this, a clear upward shift in the annual number of redundancies was observed from less than 200,000 in 1977 to about 800,000 in 1996 (De Ruyter and Burgess, 2003). In terms of the use of temporary employment, the UK has had a relatively low level of temporary employment compared to other European countries, even before the deregulation period (Smith, 2003, Edwards, 2006). Besides, it seems that there were no incentives for employers to use non-standard forms of employment such as fixed-term contracts since employment protection for standard employment had been deregulated. As a result, employers could freely terminate any employment contracts during the qualifying period. While there was a slight increase in temporary employment, from 5 per cent to over 7 per cent between 1984 and 1997, this growth was much lower than that of other European countries (OECD, 2015). This constitutes a significant difference compared to other continental

European countries where dismissal protection is strong and which in turn should make fixed-term contracts a more attractive alternative when hiring new employees (Kim and Kurz, 2001, Martin and Scarpetta, 2012).

However, it is important to note here that the pace of labour market regulation was relatively tempered during the John Major government despite the government's effort to 'opt out' of the EU social chapter at Maastricht in 1991 (Cam et al., 2003). The EU treaty obligations in employment regulation exerted a force to expand the UK employment protection in the 1990s. In 1993 unfair dismissal protection was expanded to employees who raise or pursue health and safety concerns in the workplace (1993 Trade Union Reform and Employment Rights Act) and in 1995 it was expanded to those working in part-time employment (1995 employment Protection Regulations) (Davies and Freedland, 1993, Emmenegger, 2014). Furthermore, a minimum notice period for terminating employment contracts was introduced through the 1996 Employment Rights Act (Deakin and Gillian, 2009). As a result, employees' entitlement as well as protection was somewhat extended during this period. Nonetheless, 'market-led' policies and labour market deregulation measures continued in general albeit at a more loose pace than the previous government efforts.

Under the New labour government in the late 1990s, the UK did reverse its stance to some extent. The scope of employment protection legislation became relatively broader, cutting the period of service required to claim unfair dismissal from two years to one year in 2000 (Deakin and Reed, 2000). Also, the new statutory regulation of fixed-term contracts introduced in 2002, aimed to offer equal treatment for fixed-term workers in terms of pay and working conditions compared to those with open-ended contracts (Department of Trade and Industry, 2002). Contract renewal became restricted for those employed for four years or more (OECD, 2004) and fixed-term contract employees were allowed to complain against unfair dismissal after 2 years in employment, and to claim a redundancy package (Eichhorst and Konle-Seidl, 2005). With such changes, working conditions for temporary workers were expected to improve. However, some scholars expressed concern at the limited coverage of the 2002 Act, since only fixed-term contract workers were under the protection of the act but casual, agency and seasonal workers were excluded (Green, 2007). Furthermore, with the establishment of Equality and Human Right Commission (EHRC) in 2006, the employment equality regulation

was further expanded and it was made unlawful to discriminate against employees on the grounds of gender, disability, race, gender reassignment and sexual orientation. As a result, the new regulation aimed to promote employment equality between gender, race as well as religion.

Figure 3.1. OECD index of employment protection: selected OECD countries
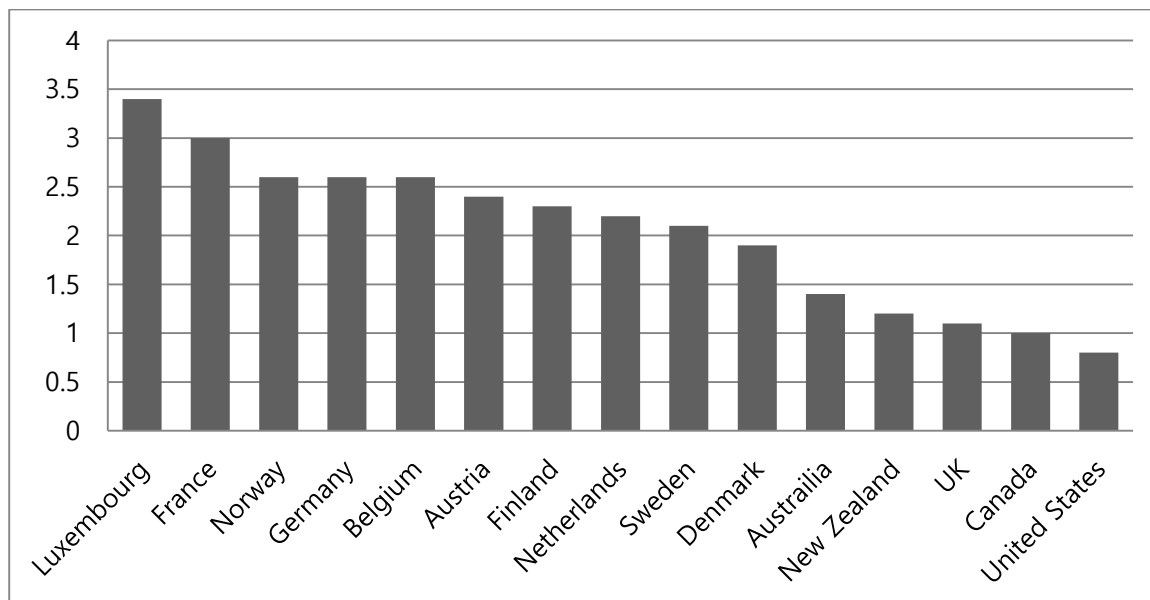
Source: OECD employment database

Nevertheless, it must be stressed that the stringency of employment protection in the UK is still relatively low. Among the OECD countries, the UK has the third lowest level of employment protection, ahead of the US and Canada (see figure 3.1) (OECD, 2015). Furthermore, the coalition government (2010-2015) extended the qualifying period for dismissal protection again from one to two years in 2011 (Parker, 2012). This reflects the UK government's light-touch approach on employment protection. Such a change also tends to provide no incentives to employ workers on temporary employment contracts since the basic regulations for standard employment contracts are as limited as those of temporary contracts. Therefore, the relatively low use of temporary employment contracts in the UK can be explained by a less regulated labour market. Approximately 6.3 per cent of the entire workforce in 2013 was employed on temporary contracts, marking a slight increase of 0.5 per cent from 2008 (OECD, 2015).

Collective Bargaining

Collective bargaining is often defined as a process of negotiation between organised workers and their employers to regulate and determine working conditions and wages (Gernigon et al., 2000). As one of the main aims of a trade union is to protect and advance the interest of its members in the workplace, bargaining coverage can be heavily influenced by trade union density and the coverage of workers (OECD, 2004). What is more, as collective bargaining can be an additional source of employment protection, it is important to review the range of agreements in the UK and their changes over time.

Traditionally, British trade unions played a highly prominent role for industrial workers. The unions were effective in guaranteeing high wage growth and defending the terms and conditions of employment (Brown et al., 1997). Sectoral levels of collective bargaining covering whole industrial sectors, including both the public and private sectors, were also typically agreed. However, the Thatcher government's liberal market-oriented approach led to a radical reduction of trade union influence in the workplace. Statutory requirements for trade union recognition were abolished in the early 1980s and a series of laws were introduced to make industrial action more difficult, by requiring a ballot to be held, outlawing political strikes and holding unions responsible for any losses from actions not respecting the new rules (Disney et al., 1995, Bonoli, 2009). Thus, trade union density declined from 50 per cent in 1979 to 30 per cent in the late 1990s (Machine, 2000). With such a decline in the power of the trade unions, the statutory regulation of collective bargaining was withdrawn and collective bargaining weakened, to the extent that it is now available at company level (Kim and Kurz, 2001). Machin (2000) has therefore argued that the decentralisation of wage bargaining has gone hand-in-hand with the sizeable de-unionization observed in the UK from 1979 onwards.

However, union recognition procedures were reintroduced in the 1999 Employment Relation Act (ERA), along with a motion to expand employment protection in the 1990s, which recognised unions as bargaining agents by the Conciliation and Arbitration Committee upon request, with or without a ballot (Wood and Moore, 2003). Such a trend can be seen as an attempt to enhance the employment rights of workers under the New Labour government. However, the proportion of employees with trade union membership in the UK continued to

decrease, from 30 per cent in 1999 to 25 per cent in 2013 (OECD, 2015). In addition, collective agreement coverage stood at 35 percent of the workforce in 2012, below the OECD average (OECD, 2012). In this context, one can argue that unions have largely had greater difficulty in recruiting members among female, non-manual and part-time workers in small non-manufacturing companies (Kim and Kurz, 2001). In other words, the decline of collective bargaining coverage with reducing union power would be anticipated, to a certain extent through the socio-economic structural changes. Indeed, the UK labour market has experienced a shift towards a post-industrial employment structure over the last few decades that is often characterised by the expansion of female labour and the growth of the service sector (Bonoli, 2007). In contrast, others argue that the unions have struggled to reinvent themselves since being forced to relinquish their influential role in the 1980s with the implementation of the Conservative government's deregulated labour market policies (Machine, 2000). Therefore, this can be viewed that a fundamental change has taken place in the role and behaviour of trade unions in collective bargaining since the 1980s. Particularly, such a change has primarily emerged in the private sector. Only 16 per cent of employees in the private sector were covered by collective bargaining in comparison to 63.7 per cent in the public sector in 2012 (Department for Business Innovation & Skills, 2012). Therefore, company level bargaining predominates in the private sector, while industrial and sectoral level bargaining tend to be more visible in the public sector (OECD, 2004).

Part-time contracts

While the use of temporary employment has been relatively low in the UK labour market, the incidence of part-time employment has been relatively high (see Figure 3.2), with a high proportion of voluntary part-time working. The share of part-time employment has been growing steadily during the post-war period with no sign of any shift, even after 1979 (Robinson, 1999, Smith, 2003). Since the share of part-time and temporary employment has differed in the UK labour market, the two different types of atypical employment should be examined separately.

Employment protection for many part-time employees had been relatively weak compared to

other European countries before 2000, when Part-time Workers Regulations were put in place. For example, prior to 2000 part-time employees working less than 8 hours per week were not covered by the most basic employment protection, such as unfair dismissal, redundancy pay and minimum notice period (Kim and Kurz, 2001). Also, those working part-time between 8 to 15 hours per week had to have a continuous employment history for 5 years with the same employer in order to be protected by any basic employment protection (Walby, 1997). Therefore, part-time workers in the UK were separated into two clear groups in terms of employment protection: the less protected part-time workers with 15 hours or fewer and the better protected part-time workers with 16 hours or more. However, it is important to note that even the latter group of part-time workers were not offered the same fringe benefits as their full-time counterparts (Kim and Kurz, 2001). In 2000, as a part of the New Labour administration's approach to improve working conditions, the Part-Time Workers Regulation was introduced in order to increase part-time employment rights and to meet European Directive obligations (SI 2000/1551). This ensured that the part-time workers were treated as favourably as full-time workers in their employment conditions.

Figure 3.2. Incidence of Part-time employment in selected OECD countries
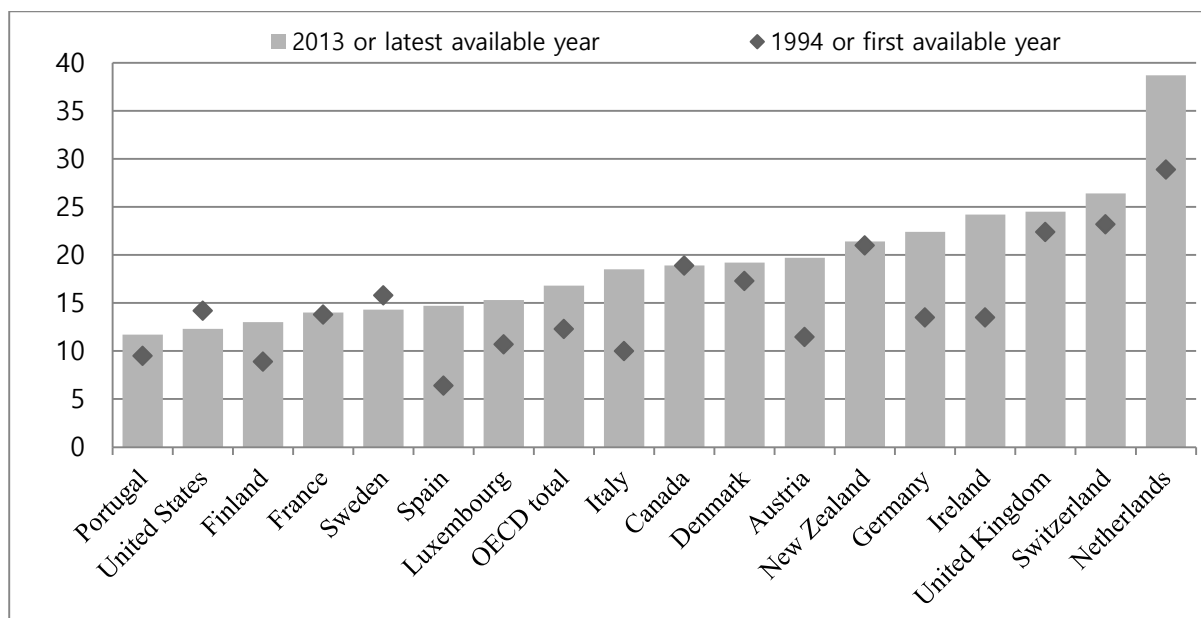
Source: OECD employment database

Although the protection for part-time workers before 2000 was decidedly limited, the

proportion of part-time employment was relatively high in comparison with other advanced industrial countries from the 1960s onwards. In 1951, the proportion of part-time employment in the UK stood at just 4 per cent of total employment, but increased steadily since then and by 1971 it rose to 16 per cent, by 1981 to 19 per cent and by 1997 to 23 per cent (Robinson, 1999), before stabilising from the early 2000s onwards (23-24 per cent) (OECD, 2015). In particular, part-time employment rose significantly during the 1960s and its share in total employment increased by 7 per cent (Robinson, 1999). Interestingly, the rate of involuntary part-time work in the UK was also relatively low (Lee, 2004) until the financial crisis in 2008. This implies that the growth in part-time employment in Britain is not particularly related to labour market deregulation procedures which mainly emerged from the 1980s; the UK already had a higher incidence of part-time employment in 1979 and the regulations for part-time employment were rather limited prior to 2000 (Robinson, 1999).

However, this trend partly reflects the increase in female labour market participation as well as diversified work arrangements with the decline of manufacturing and the expansion of service employment in the UK labour market (O'Reilly and Bothfeld, 2002). According to OECD statistics, around 40 per cent of British women in work have been in part-time jobs over the past 30 years and this proportion has remained more or less stable until now. Such a figure is also significantly higher than the OECD average at any time in its recorded history (OECD, 2015). Much of this high incidence of part-time work by women reflects its increasing role as the route by which women reconcile labour market participation with family responsibilities particularly during childcare years (Connolly and Gregory, 2008). Among the OECD countries, the UK has the highest costs of childcare apart from Switzerland, 26.6 per cent of average family income as compared to an OECD average of 11.8 per cent (OECD, 2014). Nonetheless, it is worth noting that since April 2015 some relief   is now given to parents in the UK, with 15 hours of free childcare for children over 3 years of age (GUK, 2014). What is more, the UK has had a relatively long working hours culture (Lewis et al., 2008). Consequently, women are more likely to take up part-time work after becoming mothers, to be able to balance work and family demands while keeping childcare costs down. However, part-time work is often more readily available in lower skilled occupations. Some scholars, therefore, have expressed concern that an occupational downgrading trend for women can occur when they take on part-time jobs in the UK (Manning and Petrongolo, 2005, Connolly and Gregory, 2008).

With respect of wage, the income gap between full-time and part-time workers has decreased from 35 per cent to 32 per cent from 1998 to 2003 (Butcher, 2005). However, the recent official figure by the Trade Union Congress (2012) indicates that the pay gap between part-time and full-time employment increased again to 36 per cent in 2012. This sudden growth can be partly due to the recent global financial crisis in the late 2000s and the subsequent increase in involuntary part-time employment in the UK from 2009 (OECD, 2015). Also, the risk of low pay tends to be higher among those who work part-time. According to Whittaker and Hurrell (2013), 43 per cent of all part-time workers in the UK were low paid in 2013, comprising 53 per cent of all low paid workers. Thus, the 2000 Act was expected to provide more favourable treatment for part-time workers, although it should be noted that this does not mean that part-time workers would enjoy the same pay and conditions as full-time workers.

In addition, one of the most controversial issues in recent years is the increasing use of zero-hours contracts. According to the office for national statistics (ONS), nearly 700,000 people are on zero-hours contracts in their main jobs in 2015 with an increase of more than 100,000 in the last twelve months. A zero-hour contract is a type of employment contract with no limit on number of hours worked (Pennycook et al., 2013). Thus, employees under these contracts work when required but have no guaranteed hours or times of work (Ibid).While this can offer a high degree of flexibility, the uncertainty of working under this contract may have negative implications for many people (Pennycook and Whittaker, 2012, Brinkley, 2013). Moreover, people on zero-hours contracts are at greater risk of finding themselves in low pay (Whittaker and Hurrell, 2013). In particular, the prevalence of zero-hours contracts is highest among young people (those aged between 16 and 24) in the UK, representing almost a quarter of zero-hours contract workers according to the Labour Force Survey, 2012. This implies that many young people tend to be trapped in zero-hours contracts for a longer period and those who are on this contract, particularly young people, may be unable to make financial or employment plans due to a lack of work continuity.

Wage setting policy

As many economists would argue, wages normally function as a primary income source of an individual on the one hand, while also serving as price signals in a market economy that affect

the performance of the labour market on the other hand (OECD, 2004). Nevertheless, the setting of wages is intimately linked to the institutions responsible for it, given that they can not only affect to wage structures but also represent allocative efficiency at the micro-level (Ibid:128). Thus, an analysis of wage-setting institutions is essential in order to understand the developments that have occurred in the distribution of income in the UK over the past decades.

In the post-war decades, the UK labour market became consolidated with Keynesian macro-economic policies, namely that state intervention was considered to be essential to overcome the lack of aggregate demand and to stabilise economic activity (Hall, 1993, Cromton, 1999). One example of this is wage councils, established in 1909 by Winston Churchill, that remained in place for over 80 years to protect the pay of workers (Manning, 2009). The wage councils set minimum wages and provided a national defence of terms and conditions for low paying sectors (Machin and Manning, 1994). However, the powers of wage councils were severely restricted in 1986, due to the influence of the liberal regime of employment protection, and they were completely repealed in 1993 (Deakin and Reed, 2000). In line with the abolition of wage councils, minimum wage levels were also removed and the Fair Wages Clause scrapped during the deregulation period (Cousins, 1999). Such a withdrawal of direct wage regulation might have increased the flexibility of the labour market and maintained economic competitiveness in a liberal market economy. Nevertheless, many studies noted the substantial increase in the number of low paid workers and growing earning inequality since 1979 in relation to the abolition of wage councils (e.g. Deakin and Reed, 2000, Coats, 2007). This has been regarded as one of the major causes of the slow upward movement in the number of low paid workers throughout the 1980s, and the significant increase from the early 1990s onwards (Coats, 2007).

Moreover, as mentioned above, bargaining in the UK shifted from industry or national level to the company and individual workplace in the 1980s with the decentralisation of collective bargaining. (OECD, 2004). Thus, wage bargaining now takes place within the company or workplace, especially in the private sector (Ibid). As a result, the power of trade union with respect of negotiating terms and conditions of work has declined dramatically and trade unions now have little statutory involvement in the setting of wages. In relation to this, Hayes and Novitz (2014) argue that there is also a strong relationship between the increase in the level of

economic inequality and the decline of trade unions in the UK.

However, the National Minimum Wage, reintroduced by the New Labour government in 1999, broadened the scope of wage policy to some extent (Stewart, 2004, Lewis and Campbell, 2007). Its rate is set by the Low Pay Commission that advises the government on appropriate forms, levels and rates that the minimum wage should take and recommends an adult rate or a 'development rate' for those aged 18 to 20 as well as a rate for those aged 16 to 17 (Otto and Taylor-Gooby, 2014). The initial minimum wage was set at a modest level of ￡3.60 per hour for adults in 1999, in order to avoid the risk of setting it too high (Manning, 2009). However, the minimum wage rate rose more rapidly than average earnings from 1999 to 2008 (Manning, 2009, Gregg and Wadsworth, 2011). Thus, this reform can be considered as an expansion of wage-setting regulations in UK wage policy. In this respect, the statutory minimum wage is still viewed as an effective wage floor particularly for low-wage earners in the UK liberal economy (Eichhorst and Konle-Seidl, 2005). However, Otto and Taylor-Gooby (2014) point out the latest pattern of an increasing number of workers with zero-hours contracts and/or the scope of statutory minimum wage regulation that excludes people with apprenticeship contracts. They underline that this may occur as employers want to avoid minimum wage restrictions. Furthermore, there have been debates on the various minimum wage rates, affecting different age groups and their negative effects on the rising wage gap between young people and their counterparts (Stewart, 2004, Stewart and Swaffield, 2008). What is more, the minimum wage has fallen from 2008 in real terms (and particularly from 2011), although the minimum wage in cash terms has risen every year (Manning, 2012). These findings show a close correlation with the decline of average weekly earnings in real terms in the UK. According to Adams et al.(2014), household real incomes in 2013-2014 were 6 per cent below their 2007-2008 level. Moreover, in 2011/12 more than two-thirds of adults in poverty (around 6.7 million) are in work, resulting in falling workless poverty and rising in-work poverty (MacInnes et al., 2013). In this sense, the national minimum wage has lost its vital role as a foundation to help people out of poverty (Metcalf, 2009). In fact, in 2013 6.7 million people were victims of in-work poverty, a higher number than those in workless or retired poverty (6.3 million) (MacInnes et al., 2013).

Pension policy

At its simplest, a pension is an income paid to someone who has withdrawn from paid work and the labour market. As it is invariably associated with retirement, it is often considered to be an important social protection against the risk of eventually being unable to work. It also involves a national pooling risk with state pension schemes, or at individual levels through employment packages or private schemes (Alcock et al., 2008). However, the replacement rate of the basic state pension scheme in the UK is fairy meagre, one of the least generous in the OECD, with only Mexico offering less for those upon retirement (OECD, 2013). The 2013 OECD annual report on pensions indicates that the UK state pension system delivers 32 percent of earnings replacement rates for average earners, compared with 59 per cent in France, 42 per cent in Germany and 39 per cent in the USA. This implies that occupational pensions, provided by employers for their workforce, have become a more substantial component of an employee's total employment package, along with other components of pay and conditions (Blake, 2004). Occupational pension coverage in the UK grew extensively across industries after the war, peaking in 1967 at 66 per cent of male and 28 per cent of female workers. (Evandrou and Falkingham, 2009). Such a growth is often seen as the result of collective bargaining between trade union and employers (Alcock et al., 2008).

The state pension provision in the UK has always been low during the post-war era (Taylor-Gooby et al., 2004, OECD, 2007). In 1946, the National Insurance Act was implemented to provide universal pension provision but with the principles of flat-rate contribution for flat-rate benefits (Macnicol, 1998). The flat-rate principle meant that benefit levels had to be low since contribution levels were be low enough for the lowest-paid workers to be able to afford them (Alcock et al., 2008). This reflects that the basic state pension was designed to supplement voluntary forms of pension saving or additional pension provisions through work. However, changes were made in the 1970s which introduced the State Earnings-Related Pension (SERPS), an additional pension which supplemented the basic pension with the intension of improving workers' contribution records.

During the successive Conservative governments from 1979 to 1997 which was marked as the deregulation period, some minor reforms were introduced which put limits on state pensions;

for example, the SERPS was tightened in 1986 in order to reduce future costs (Alcock et al., 2008). Nevertheless, there were no fundamental changes in the structure of state pension provision. The Conservatives viewed occupational pension schemes as inflexible and hindering labour mobility (Baggott, 1994, Alcock et al., 2008). Thus, occupational pension membership became voluntary, ending compulsory requirement of occupational pension membership in 1986 (Blake, 2002). As a result, there has been a significant decline in the membership of occupational pension provisions, especially in the private sector, with added financial pressure for employers to pay into the scheme (O'connell and Silver, 2005, Arkani and Gough, 2007). For example, private sector membership had been in decline from 1967, reaching a peak of 8.1 million, to 6.7 million in the end of the 2000s (ONS, 2013). Public sector membership also decreased with a reduction of the size of the public sector from 5.5 million at its peak in 1975 to 4.1 million in 1995 (Ibid). However, the more concerning problem with such changes was that those excluded from occupational pension schemes were more likely to be people with low and interrupted earnings, women, ethnic minorities, workers in small firms and the self-employed (Alcock et al., 2008). According to the pension commission (2004), the degree of involvement in occupational pension schemes was closely associated with factors such as income level, gender, ethnicity and size of firms.

While the Thatcher government sought to reduce the cost of pension provision, this strategy seems to continue under the New Labour government on one hand, such as raising the age of entitlement for the basic state pension from 65 to 66 between 2018 and 2020 (Department for Work and Pension (DWP), 2006). However, New Labour at least looked to censure their inadequate oversight and regulation of pension schemes, particularly with occupational pensions from the late 1990s on the other hand. Hence, there was a much greater emphasis on redistributing resources to poorer members of society by providing more state help for those unable to save for retirement (Blake, 2000). Also, in order to help offset the decline of occupational pensions, mandatory enrolment for occupational pensions was introduced in the 2008 Pension Act. (Department for Work and Pension, 2011). This reform focused on encouraging individuals to save more for retirement, building on the foundation of the state pension. Furthermore, the National Employment Saving Trust (NEST) was introduced in order to manage the workplace pension scheme, designed for employers to meet their new duties at low charge (Otto and Taylor-Gooby, 2014). This indicates that New Labour's approach at least

attempted to improve pensioners' living standards and security through a series of pension reforms, while the impact on pension provisions is still contested. However, as these reforms under the New Labour government only began to operate in 2012, it may be too early to discuss their effects.

3. Conclusion

Over the last few decades, the UK labour market has undergone a major transformation. Until the end of the 1970s the labour market was underpinned by a Keynesian economic strategy, largely based on demand management strategy through generous public standing and investing (Crompton, 1999). However, from the 1970s socio-economic transitions such as de-industrialisation and the expansion of female labour market participation have affected the structure of the labour market in the UK (Crompton and Sanderson, 1990). De-industrialisation generated high levels of unemployment as the decline in manufacturing industry led to a new and expanding service economy. The individualisation of society also brought changes in traditional gender roles and produced more diversified career patterns in the labour market. Furthermore, the election of Margaret Thatcher in 1979 introduced a great political change and signalled the end of Keynesian macroeconomic management policies in the post-war period. Deregulatory labour market policies became a key element in UK labour market strategy under successive Conservative governments and a number of measures aimed to reduce the negative effects of protective labour market regulations (Deakin and Reed, 2000). These deregulation movements in the British labour market have been closely linked to the great interest of flexibility in the labour market and a desire to increase economic competitiveness in the globalisation era. These developments now characterise the UK as a prototype of a liberal market economy (Soskice, 1999). Such features are in a sharp contrast to coordinated economies where increasing flexibility has been represented on the margins of the labour market and through fostering a range of atypical employment opportunities (Palier and Thelen, 2010). Under the New Labour government, however, the UK partially reversed their stance on labour market policies. While overall liberal market policies remained more or less intact, a number of market regulations were introduced from the late 1990s to the late 2000s in order to address the problems favoured by embedded market forces.

In liberal market economies, institutional features generally emphasise self-regulation by the market and encourage more competitive employment relations. The UK also made several steps to deregulate the labour market in order to increase flexibility and promote competitiveness in the labour market in the 1980s. Statutory employment protection legislation were scaled back and collective and wage bargaining procedures weakened, as the strength of traditionally prominent trade unions was curtailed, accompanied by a series of reforms (Kim and Kurz, 2001). Furthermore, the abolition of wage councils in the 1990s and the reduction of public subsidies such as the state pension, as well as occupational pension schemes, ushered in the era of the liberal labour market.

Therefore, there seems to be a clear distinction made in the way in which the UK attempted to increase the flexibility of the labour market compared to the way coordinated economies of continental European countries such as Germany and France tried. For example, the development of a flexible labour market in Germany was mainly facilitated through the expansion of flexible or non-standard forms of employment (Eichhorst and Marx, 2011). However, non-standard forms of employment such as temporary and part-time employment were not used to encourage the development of a flexible labour market in the UK setting. The share of temporary employment in the UK has been relatively low from the post-war period and it did not increase significantly in recent decades. By contrast, part-time employment has become far more widespread since the 1960s while employment protection for part-time workers was only expanded in 2000. Thus, there appears to be no clear associations between the higher incidence of part-time employment and labour market deregulation since 1979. Furthermore, standard employment contracts have never enjoyed legal protection in the UK labour market, compared to other European countries (Kim and Kurz, 2001). As a result, there were no specific incentives for employers to hire employees with temporary forms of employment to avoid the financial penalties in the UK labour market. Therefore, I can argue that the process to increase flexibility and maintain competitiveness in the UK labour market during the 1980s and 1990s was mainly through deregulatory labour market policies.

However, the New Labour government which came to power in 1997 broadened the scope of labour market regulations to some extent. For example, employment protection legislation was expanded by introducing the Employment Relation Act in 1999 (Countouris, 2013). From this,

the qualifying period for unfair dismissal protection for full-time workers was reduced from two years to one year in 1999, although it increased to two years again in 2012. What is more, new statutory restrictions on the use of part-time workers and fixed-term contracts were introduced in 2000 and 2002 respectively to prevent workers being treated unfairly by their employers. Furthermore, the New Labour government put a statutory national minimum wage in place to protect low-wage earners (Gregg and Wadsworth, 2011). The pension scheme was also enlarged after a series of reforms in both state and occupational pensions. In this respect, it can be noted that the New Labour government formally committed to providing legal employment protection, in particular for those in low-paid and low-skilled employment.

Nevertheless, the victory of the Labour party in 1997 did not reverse the Conservative government's determination to deregulate labour market policies. According to Jessop (2003), New Labour followed the footsteps of Thatcherism in promoting the Schumpeterian workfare regime. While New Labour did expand some labour market policies and protections, they still emphasised the significance of employment and reducing public spending, particuparly those based on universal system. The level of employment protection also remained much lower than in other European countries. Furthermore, the decentralisation of wage bargaining with the decline of trade unions and the abolition of wage councils have increased marginal, low-paid and low status employment in the labour market, despite the introduction of national minimum wage in 1999.

In conclusion, one of the most distinctive characteristics of the UK labour market can be defined as a shift from a Keynesian market economy to the exemplar of an European liberal labour market economy with the introduction of a series of deregulated labour market policies over the last 30 years. The UK underwent socio-economic changes, similar to many developed countries through the 1970s and 1980s. However, the political interventions in the labour market were rather different compared to other European countries, particularly introducing a number of deregulated labour market policies in the 1980s. Such characteristics of labour market policies and institutions are now a feature of the political and social structure of the UK, despite the New Labour administration's attempts to focus on providing assistance to those in low-paid employments. As a result, it may reflect the widening gap between pay levels and increasing in-work poverty issues, as well as high income inequality which has become more

pronounced since 1979. This implies that the characteristics of divisions in the labour market can be more accurately presented through an analysis of the emphasis upon wage characteristics, which I have sought to do here.

Chapter IV. Data and Methodology

1. Introduction

In this chapter, I describe the main data sources for this study, namely the British Household Panel Survey (BHPS) and Understanding Society, and methodologies used in the analytical chapters; latent class, latent transition and multi-nominal logistic regression analyses. This chapter further elaborates on these methods and the reasons for their application for measuring UK labour market division with the selected data set.

This chapter is structured as follows. In the next section, I explain the BHPS and Understanding Society data set and discuss issues concerning the size and scope of the data in this study. At this juncture I justify why these two data sets are crucial for measuring the labour market divisions in the UK for the last 20 years. In section three, I examine the main methodologies used in this research (latent class, latent transition and multi-nominal logistic regression analysis) and clarify the choices made in the use of these methods. I also explain the technical specifications of each analysis in order to provide in-depth information of each model and to improve the credibility of the research.

2. Data set

This study uses data from the BHPS from 1991 to 2008 and Understanding Society in 2010. The BHPS and Understanding Society are designed as a panel survey of households with yearly interviews. The BHPS was launched in 1991 as the UK's first socio-economic household panel survey, which came to an end in 2008 with the start of a new panel survey, namely Understanding Society, which was launched in 2009 (University of Essex, 2013). Both surveys interview a nationally representative sample of individuals, mainly adult members (age 16 or above), and follow the same individuals over a period of years (Taylor et al., 2010, University of Essex, 2013). Thus, the size of the sample has remained accurately representative of the population of the country. The BHPS wave one started with more than 5,000 households, containing a total of approximately 10,000 individuals (Taylor et al., 2010). Furthermore, additional samples were added in 1999 from Scotland and Wales and in 2001 from Northern

Ireland to make the panel survey more suitable for the UK as a whole, and to allow comparative research within the UK (Ibid). By 2009, the BHPS collated a total of 18 years of panel data which became one of the longest panel surveys in the world. Thus, this thesis makes use of the entire BHPS data set, from 1991 to 2008. In 2010-2011, almost 6,700 of just over 8,000 BHPS participants in 2008 were incorporated into the Understanding Society Panel. As a result, more than 20 years of the panel data set is available to use for this research. However, since the BHPS participants joined the Understanding Society panel survey in 2010, the 2009 data is not available for this research. Moreover, some of the core questionnaires such as the information about the coverage rate of occupational pensions have been excluded from the 2011 data in the Understanding Society panel survey when restructuring the survey contents. Nevertheless, it is considered that examining labour market divisions in the UK between 1991 and 2010 still allows for enough time to measure labour market divisions and their changes through examining individual workers' careers.

Interviews for the both surveys are mainly conducted via face-to-face methods. Telephone interviews were also allowed from Wave 3 onwards once an initial face-to-face interview was conducted in Wave 1 and 2, based on restricted conditions when the interviews are unable to be conducted in person (Nicoletti and Buck, 2004). This indicates that that the quality of the data is continued to be reliable as it provides accurate information from a representative sample of individuals. The BHPS and Understanding Society also have extensive labour market history information from the respondents from their first labour market entry via retrospective investigations and during the panel period (Taylor et al., 2010). The core questionnaire covers individuals' education and training histories and labour market behaviours such as income from employment, benefits and pensions as well as socio-demographic information. Considering that both surveys contain rich information from the representative sample of individuals' labour market participation trajectories and their employment histories through the panel structure over the last 20 years, these data sets are considered to be the most appropriate to use for this research.

However, it is important to note here that this research aims to empirically explore the labour market divisions focusing on the employed population of the UK over the last two decades. Thus, the sample of this research consists of dependent employees among the original BHPS

sample members who participated in the surveys from 1991 onwards. The additional samples from Scotland and Wales and the extended Northern Ireland sample are therefore excluded from this study, since those samples were added in 1999 and 2001 respectively. Therefore, this research examines the labour market divisions using the original BHPS sample while living in the UK as a dependent employee for the last 20 years. In other words, people who are unemployed, self-employed or economically inactive are excluded in this research. Overall, the ratio of dependent employees to the total labour force is around 50 per cent and the actual sample size for this research is more than 4000 individual employees for each year, while the size of the sample has gradually declined from 1991 to 2010 due to sample attrition and missing values[1]. Table 4.1 displays the yearly sample distribution for this research between 1991 and 2010.

Table 4.1. Size of dependent employees among the BHPS original sample members between 1991 and 2010

Year	N
1991	4,974
1992	4,756
1993	4,674
1994	4,639
1995	4,611
1996	4,741
1997	4,854
1998	4,882
1999	4,843
2000	4,823
2001	4,834
2002	4,713
2003	4,644
2004	4,626
2005	4,552
2006	4,507
2007	4,389
2008	4,239
2010	3,213

However, this thesis makes use of this sample to measure the cross-sectional patterns of labour

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[1] As less than 7,000 BHPS members are incorporated into the Understanding Society panel from 2010, the sample size in 2010 is much smaller than in other years

market divisions each year between 1991 and 2010 as well as examining the stability of each labour group longitudinally. Thus, it is important to underline at this juncture that the sample size for the longitudinal analysis will be relatively different from the presented table above due to changes of individual workers' positions at each time point. The detailed information and description of the longitudinal study sample will be further explained in chapter 6.

3. Methodologies

In this section, I examine the main methodologies used in this thesis. Latent class analysis (LCA) is firstly explained; it is used for measuring the patterns and characteristics of labour market division in the UK in chapter 5. Next, I outline the concept of latent transition analysis (LTA) and its use to test the stability of divisions in the UK labour market in chapter 6. In the final section, multi-nominal logistic regression analysis is examined and describes how this model is used to define the main determinants of labour market divisions.

3.1 Latent class Model: Multiple group latent class analysis

Definition

LCA employs statistical methods to identify the presence of an underlying latent variable within the relationship among a set of observed variables, which is conceptually similar to factor analysis (McCutcheon, 1987, Nylund, 2007). Thus, LCA facilitates the finding of a number of exclusive and exhaustive subsets of individuals defined as the unobserved latent variable from analysing the relationship between a set of observed variables (Collins and Lanza, 2010). In this context, LCA is relatively similar to factor analysis but the main distinguishing point of LCA is that an unmeasured latent variable and its observed variables (indicators) are both categorical in LCA, whereas the observed variables in factor analysis are continuous variables. The latent class model is firstly introduced by Lazarfeld and Henry (1968) to categorise individuals into classes based on a set of measured binary data. Since then, increasing number of studies apply LCA for their research; for example, deriving meaningful groups of individuals based on working conditions and employment arrangements (Van Aerden et al., 2014), different living conditions and material hardship (Rose et al., 2009) or different personalities (Lee et al.,

2014). LCA is a person-centred approach unlike variable-centred modelling such as structural equation techniques, and can therefore be considered to be more holistic (Van Aerden et al., 2014). Thus, chapter 5 applies the analysis aimed at exploring unanswered research questions about the actual patterns of labour market divisions in the UK over the last 20 years, based on individual workers' different employment, income and occupational status. In order to capture unobserved heterogeneity in dependent employees and the subsequent segmentation in the labour market, the LCA model is applied with a series of measured data of dependent employees' labour market positions.

In this thesis, I use multi-group LC modelling in various latent class models. Multiple group LCA is especially useful when there are existing subgroups in the data representing different populations and when the differences across these groups need to be compared within the latent class model (McCutcheon, 2002, Collins and Lanza, 2010). In other words, multiple group LCA examines differences between populations where the underlying latent group can be measured directly and this latent membership can be accordingly examined with the differences of population groups. For example, there may be an interest in examining the underlying latent factor between different gender, age or cohort groups. In this research, the unobserved pattern of labour market division in the UK is examined over the last 20 years and this pattern is accordingly compared with time cohorts to explore potential variations of divisions within different time points. Through this modelling technique, I can assess the general pattern of labour market division in the UK between 1991 and 2010 and the statistical significance of the variations in the pattern of division across the different points. Figure 4.1 depicts the path diagram of the general. γ_1, $\gamma_2..\gamma_n$ represent observed variables, L is the categorical latent variable and g is the different group. While the operationalisation of observed variables and more detailed information will be represented in chapter 5, γ_1, $\gamma_2..\gamma_n$ indicate dependent employees' labour market position, including employment contract status, income, occupational status and pension accessibility, L represents the labour market divisions in the UK and g represents the year.

Figure 4.1 General multiple group latent class diagram
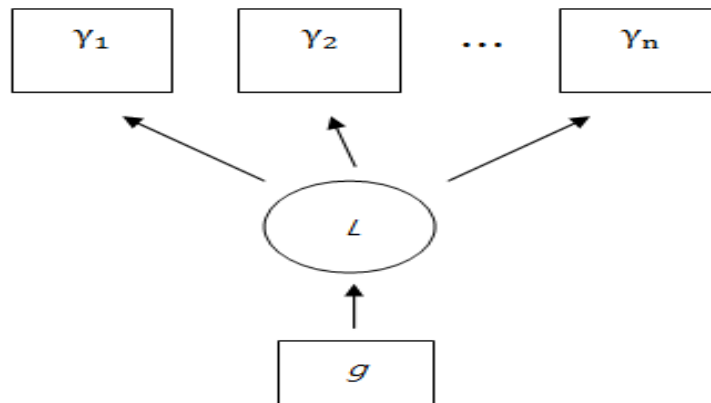
Comparing the fit of measurement models and deciding on the number of classes in LCA

The model assessment for latent class models, which is centred on finding the appropriate number of latent classes, is often unknown. However, the analysis models the data as a finite mixture of distribution that each individual is placed on one of the latent groups (Dean and Raftery, 2010). Thus, the process of deciding the number of classes is important. This process usually starts by specifying a smaller number of classes (usually 1 or 2-class LCA model) and increasing the number of classes until the models do not converge or the outcome of the analysis is nonsensical (Nylund, 2007). Here, the fit of each model is often considered by comparing the statistical fit indices. The comparative information criteria (IC), such as Akaike's information criterion (AIC) and the Bayesian information criterion (BIC), are frequently used to select the best fitting model: the model with the lower value is the better fit (Nylund et al., 2007, Gerber et al., 2009). I consider both the AIC and the BIC results for assessing the model fit. However, it is worth noting that AIC and BIC do not always coincide with which is the "better" model (Nylund et al., 2007, Mejlgaard and Stares, 2012). This means that there is no definite way of deciding the absolute fit of the model. For this, the percentage of standardized two-way marginal residuals is also considered to check the model fit both for overall models and also the condition on time points so as to gauge where the best and worst fit is over the last 20 years.[2] As residuals indicate how far off the expected and observed values for the model is

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[2] In addition to the statistics describing the proportion of large two-way marginal residuals, I also check other

based, it can provide which values drive the lack of fit (Field, 2009). It is often considered that if the standardized marginal residual is greater than four, it suggests a poor fit as an average rule of thumb (Bartholomew et al., 2008). Nevertheless, there are no absolute published guidelines on which percentage of residuals indicates the dividing line between well-fitting and poor-fitting models (Mejlgaard and Stares, 2012). Therefore, I take account of statistical, practical, and theoretical considerations in determining the appropriate number of classes.

LCA model parameters

In LCA models, there are two types of parameters, namely item probability parameters and class probability parameters (Nylund, 2007, Collins and Lanza, 2010). Once the appropriate number of latent class is identified, the LCA represents the conditional item probabilities which contain information on the likelihood that an individual endorse in observed variables given a specific number of latent classes. In other words, the item parameters correspond to the conditional item probabilities. The characteristics of each latent class category can be interpreted from the indications of the response profile. This means that the characteristics of each labour group can be identified by the conditional item probabilities on each observed variable. In our model, the characteristics of each labour segment can be defined with individual workers' employment and income characteristics. The class probability parameters provide the information of prevalence of each latent class in the population. From this, the relative frequency of latent class membership can be gauged.

Measurement invariance

In the multi-group LC models, the distributions of latent variables are to be compared across different sub-groups or time cohorts. Thus, it is important to check whether latent classes have the same meaning in all groups (i.e., whether measurement invariance can be established). When measurement invariance is established, it implies that the class-specific conditional response probabilities are equal (Kankaraš et al., 2010). This is an ideal situation for a researcher who aims to compare sub-groups or time cohorts as the relationship between

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conventional statistics: the likelihood ration chi-squared statistics (L2) and number of degrees of freedom for the model and corresponding bootstrapped *p*-value. Detailed information is presented in chapter 5.

observed variables and the latent variable is equal across groups or time cohorts, thus the class membership in the latent variable has the same meaning. However, in comparative social research it is difficult to have a case in which the population at each sub-group or time cohort is identical, where measurement invariance is often constructed. In cross-sectional data, there are typically differences in population which can affect LC membership probabilities. In chapter 5, labour market divisions are examined through multi-group LC models and their patterns are compared at different time points between 1991 and 2010 with the different sample sizes as discussed above. This indicates that the flexibility of the multi-group LC approach should be considered with regard to measurement invariance in this research. This can be measured through freeing intercept parameters at the observed categorical variable level. Detailed information and operationalisation of this technique is explained further in chapter 6.

Latent class modelling equations

The basic structure of latent class modelling can be specified in equation formats as follows: Let $j=1,...,J$ observed variable, and observed variable j has $r_j=1,...,R_j$ response categories. L is the categorical latent variable with $c = 1,...,C$ latent classes. I model that the probability of belonging to class c as γ_c and the item-response probability of objected variable j is referred to as ρ_j.

As the latent classes are mutually exclusive and exhaustive, each individual is a member of one and only one latent class. Thus,

$$\sum_{c=1}^{C} \gamma_c = 1 \tag{1}$$

Also, each individual provides one and only one response alternative to variable j, the vector of item-response probability $\rho_j,\gamma_j/c$ (the probability of response γ_j to observed variable j, conditional on membership in latent class c) always equals 1. Therefore,

$$\sum_{r_j}^{R_j} \rho_j,\gamma_j|c = 1 \tag{2}$$

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Suppose $\mathcal{Y}_j$ is the element of j of a response pattern **y**. I model an indicator function $I(\mathcal{Y}_j=\gamma_j)$ that equals 1 when the response of variable $j = \gamma_j$, and otherwise equals 0. Then I follow with an equation of how the probability of observing a particular vector of response is a function of the probabilities of membership in each latent class (the γ) and the probabilities of observing each response conditional on latent class membership:

$$P(Y = y) = \sum_{c=1}^{C} \gamma_c \prod_{j=1}^{J} \prod_{\gamma_{j}=1}^{R_j} \rho_{j,\gamma_j}|c^{I(\mathcal{Y}_j = \gamma_j)} \tag{3}$$

The equation of the probability of a particular observed response pattern $\mathcal{Y}$ conditional on membership in latent class c is,

$$P(Y = y|L = c) = \sum_{c=1}^{C} \gamma_c \prod_{j=1}^{J} \prod_{\gamma_{j}=1}^{R_j} \rho_{j,\gamma_j}|c^{I(\mathcal{Y}_j = \gamma_j)} \tag{4}$$

The next step, after computing the conditional response probabilities for each latent class c, is to obtain the unconditional joint probabilities of latent class c and response pattern y, P (Y = y, L= c), for each of the C latent classes. The equation for this is,

$$P(Y = y, L = c) = P(L = c)P(Y = y|L = c) = \gamma_c \prod_{j=1}^{J} \prod_{\gamma_{j}=1}^{R_j} \rho_{j,\gamma_j}|c^{I(\mathcal{Y}_j = \gamma_j)} \tag{5}$$

In terms of conducting the multiple group latent class models, I introduce a group variable V with $q= 1,...,Q$ groups. In this research, V represents cohorts and there are $Q=19$ groups: total dependent employees in BHPS from 1991 to 2010. Each response pattern y corresponding to cohort q is related with a probability of occurrence $P(Y = y / V = q)$, and within each time point 1, $\sum P(Y = y|V = q) = 1$. Thus, the equation of conditional membership in latent class c and group q is,

$$P(Y = y | \; V = q) = \sum_{c=1}^{C} \gamma_{c|q} \prod_{j=1}^{J} \prod_{\gamma_{j=1}}^{R_j} \rho_{j,\gamma_j | c, q}^{I(y_j \; = \; r_j)} \tag{6}$$

3.2 Latent transition analysis

Definition

Latent transition analysis (LTA) is a type of longitudinal analysis of LCA that is designed to provide not only the prevalence of latent class membership but also the incidence of transition between the latent classes over a period of time (Nylund, 2007, Collins and Lanza, 2010). Thus, LTA modelling is used when a closer look at the changes in latent class membership of individuals over time is required. This means that LTA is closely related to LCA since LCA identifies latent subgroups within a population based on individual responses of observed items and LTA identifies the movement of individuals between latent subgroups as a longitudinal format. Thus, LCA is the most commonly used measurement model in terms of deciding the appropriate classes of latent variables in LTA (Nylund, 2007). Applications of LTA have been increasingly popular in a variety of social science disciplines to address diverse subjects that examine a longitudinal/progression modelling context. For example, several studies have used LTA to examine adolescents' substance use and transition paths for young adults (Chung et al., 2005, Auerbach and Collins, 2006, Lanza and Bay, 2011). LTA has also been used to shed light on understanding changes in peer victimization experiences of school students by focusing on students' transition between three different victimization classes, namely victimised, sometimes victimised or non-victimised (Nylund, 2007). Furthermore, LTA is also applied to identify young people's different offending behaviours and to highlight their transition patterns over time (Francis et al., 2007). Since this thesis aims to analyse the positional stability of individuals in a divided labour market and examine mobility patterns between labour market segments, latent transition modelling can serve as the most appropriate methodology. With the LCA results derived from chapter 5, the LTA allows for an assessment of the transition probabilities of individuals between the divided labour groups. Furthermore, by analysing the

extent of stability/mobility of individuals in each labour market segment at different time points, it can evaluate whether the segmentation in the labour market has deepened over the last 20 years. Hence, in chapter 6 LTA modelling is used to measure the extent of the stability of each labour market segment in the UK and which group is most likely to have a high incidence of stability/mobility.

Higher- order effects

Higher-order effects are one of the LTA model specifications that can capture the time-dependent relationships when the LTA model uses more than two time points. While most applications of the LTA model assume the relationship of time effect, higher-order effects are particularly able to specify the interactions beyond the first-order interaction. Figure 4.2 presents higher-order effects when three discrete time points are applied in the LTA. The arrow connecting L_1 to L_3 describes higher-order effects, specifically second-order effects, and the arrow from L_1 to L_2 and L_2 to L_3 describe first-order effects. It is often noted that when the LTA model examines transition probabilities with more than three time points, higher-order effects should be included in the model since they can deliver richer information than the sole capture of first-order effects (Nylund, 2007). As depicted in figure 4.2, L_1 influences L_3 directly as well as indirectly through L_2 when three time points are applied in the LTA model. The higher-order effect can then detect if there is a direct relationship of L_1 on L_3, over and above the first-order indirect effect. In other words, by considering the second-order effect within the time dependent relationships, further exploration is possible of the impact of lasting direct effects on whether a member of a given a class at L_1 has class membership at L_3. For example, when measuring the mobility patterns of individuals between labour market segments in 1991, 1992 and 1993, the higher-order effect specification can capture not only the first effect between 1991 and 1992 and 1992 and 1993, but also the direct effect from 1991 to 1993.

Figure 4.2 A latent transition model diagram with three observed variables and three
        measurement points, including a first and second- order effect
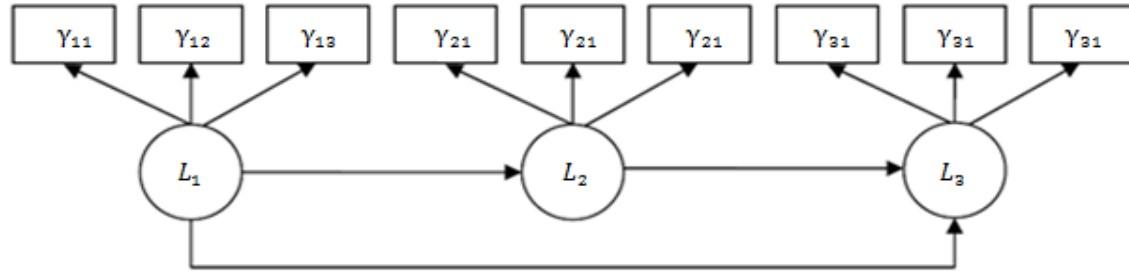
Measurement invariance

In LTA modelling, built on LCA, an analysis interprets the transition probabilities between the
latent classes across time. Thus, it is important to check again whether latent classes have the
same meaning across different time points (i.e. whether measurement invariance can be
established or not). (Nylund, 2007, Collins and Lanza, 2010, Kroesen, 2014). Many scholars
note that testing measurement invariance is an important prerequisite process for validating
cross-group comparisons of latent variables at different time points and across different time
points (Nylund, 2007, Hancock and Samuelsen, 2008). Thus, an assessment of the parameters
that are related to the measurement model of LCA at each time point should be carried out,
with a focus on whether these parameters are equal or not. In the case that LTA measurement
invariance is established, the item-response probabilities across latent classes for the
categorical latent variable are equal across different time points. This indicates that the same
number and features of classes occur at across the time points. In other words, the pattern of
labour market division and the features of divided labour groups are exactly same at the
different time points. However, the size and features of labour market segments can change at
different time points. Thus, a different level of measurement invariance should be considered.
In particular, for applications in which latent class models are used in an exploratory manner
rather than in a confirmatory manner to identify the number of classes, latent model literature
recommends testing different degrees of invariance models before presenting the best fit model
(e.g. Nylund, 2007, Kroesen, 2014). There are three levels of measurement invariance: full
measurement invariance, partial measurement invariance and full measurement non-invariance.

Full-measurement invariance simplifies the estimation and interpretation by measuring the same conditional response probabilities (same item parameters) in the respective classes of latent variables across the time points. For instance, if applying full-measurement invariance in this study, the characteristics of the divided labour groups are assumed to be exactly same across the three time points as the item parameters are assumed equally between the time points. Consequently, interpreting the transition probabilities is straightforward as the meanings of the classes are the same across time (Nylund, 2007). In contrast, full measurement non-invariance does not impose the same measurement model across the different time points, thus equality of measurement parameters is not assumed. Here, all the measurement parameters vary across time and the latent classes are freely estimated across the time points. This can be shown as estimating the divided labour market across the three different time points without imposing any measuring restrictions. The full measure non-invariance measurement is, therefore, the most flexible model, but, as a result, the characteristics of latent classes can be different across time (Collins and Lanza, 2010). Partial measurement invariance is a middle ground between full measurement invariance and non-invariance model specification. It makes assumptions about equal parameters on the item probabilities for some observed items across time within a specific latent class or all observed items within a class while the rest are unrestricted. Thus, there can be a large number of partial invariance models. More specific application methods that are applied in this study are explained in chapter 6. According to Nylund (2007:139), many applications of LTA place little importance on the plausibility of measurement invariance and consequently assume full measurement invariance. However, when the measurement differences are ignored, the model interpretation can be affected significantly as the important development differences that may exist can be ignored by only exploring the full measurement invariance (Nylund, 2007). In order to conduct a statistical assessment of significant differences in the model fit with different measurement invariance strategies, a statistical test in the form of log-likelihood ratio tests (LRTs) is used to select the most appropriate model.

Latent transition modelling equations

As mentioned above, LTA is built on the LCA measurement model, and it therefore provides the prevalence of unobserved latent class membership while also estimating the incidence of

transition probabilities between the latent groups over time. Hence, in LTA modelling, the prevalence of latent status at each time point should firstly be measured. Take $j = 1,.....J,$ as a set of observed variables, and suppose that these observed variables have been measured at $t = 1,....T$ times. As described above, latent status is mutually exclusive and exhaustive at each time point which means that each individual should be a member of only one latent class at time t. Hence, within a particular time t, the sum of latent class prevalence is 1. If δ_{s1} represents the prevalence of latent class s at time t, the equation for latent class prevalence is,

$$\sum_{s_t}^{S} \delta_{s_t} = 1 \tag{7}$$

Item response probabilities for each time point in LTA are also measured through the LCA measurement model. When there is an underlying latent variable from the relationship between a set of observed variables 1... J at time t, there are R_j item response probabilities. Since each individual responds only once to each observed variable, the item probabilities of each of the response alternatives to variable j sum to 1. This can be represented as

$$\sum_{r_{j,t}=1}^{R_j} \rho_{j,\gamma_{j,t}|s_t} = 1 \tag{8}$$

In this equation, $\rho_{j,\gamma_{j,t}|s_t}$ indicates the probability of response $\gamma_{j,t}$ to observed variable J, and conditional membership in latent class s_t at time t.

However, measuring the incidence of transition patterns of individuals in latent class membership means that among individuals in the latent class s_t at time t, some people may stay in the same latent class at time $t+1$ while others may be in a different latent status. Suppose that $\tau_{s_{t+1}|s_t}$ indicates a probability transition to latent class s at time $t+1$, conditional on latent class s at time t, the transition probability matrix is arranged as follows:

$$
\begin{bmatrix}
\tau_{1_{t+1}|1_t} & \tau_{1_{t+1}|1_t} & \cdots & \tau_{1_{t+1}|1_t} \\
\tau_{1_{t+1}2_t} & \tau_{1_{t+1}|2_t} & \cdots & \tau_{1_{t+1}|2_t} \\
\cdots & \cdots & \cdots & \cdots \\
\tau_{1_{t+1}|S_t} & \tau_{1_{t+1}|S_t} & \cdots & \tau_{1_{t+1}|S_t}
\end{bmatrix} \tag{9}
$$

In addition, as individuals are assigned to only one latent class at each time point, the sum of transition probability become 1. In other words, each row of the transition probability matrix adds up to 1. The can be indicated in the equation as:

$$
\sum_{S_{t+1}=1}^{S} \tau_{s_{t+1}|s_t} = 1 \tag{10}
$$

Based on these two relatively similar sets of items that are latent class parameters with newly introduced transition probability parameters, LTA modelling can estimate the transition pattern between the latent groups across the time points. Let δ_{s_1} be each individual's latent class membership probability at time 1, τ is the transition probability at each time point conditional on the latent class membership at previous time point, and ρ is the item response probabilities at each time conditional on latent class. Also let $I\ (\mathcal{Y}_{j,t} = \gamma_{j,t})$ be the indicator function that becomes 1 when the response to variable $j=\gamma_j$ at time t and otherwise 0. Then, the latent transition model can be represented as:

$$
P(Y = y) = \sum_{s_1}^{S} \cdots \sum_{s_{t}=1}^{S} \delta_{s_1}\, \tau_{s_2|s_1} \cdots \tau_{s_t|s_{t-1}} \prod_{t=1}^{T} \prod_{j=1}^{J} \prod_{\gamma_{j.t}=1}^{R_j} \rho_{j,\gamma_{j,t}|s_t}^{I(\mathcal{Y}_{j,t}=\gamma_{j,t})} \tag{11}
$$

3.3 Logistic regression model: Multi-nominal logistic regression analysis

Definition

One of the aims of this thesis is to find the key driving factors which divide the UK labour market and to assess the different nature of labour market segments through determining the different features of the individuals in each labour group. In order to do this, I use a regression

analysis technique. As the main purpose of regression analysis is to assess a causal relationship between variables, regression modelling can be a useful statistical tool for investigating the reasons behind the emergence of divisions in the labour market. However, it is important to remember that this study seeks to find the causal relationship of the labour market divisions in the UK which are presented in several discrete groups rather than in a linear formation. In this context, a logistic regression analysis is applied as part of a category of generalised linear models. What distinguishes the logistic regression analysis from the linear regression model is that the dependent variable in logistic regression is a categorical variable, not a continuous variable (Hosmer and Lemeshow, 2000). In other words, the logistic regression analysis is a type of multivariate regression modelling that estimates the relationship between a set of independent variables when the target variable is categorical. Here, the independent variables can be continuous and/or categorical variables. From the analysis, one expects to see the proportion of variance in the dependent variable that is explained by the independent variables. Furthermore, the relative importance of independent variables can be gauged and their interaction effects can be assessed. Thus, the use of logistic regression analysis can be easily found in various academic disciplines. With its original acceptance in epidemiologic research, logistic regression modelling is now commonly used in many social science fields including labour market research, health policy and criminological research (Hosmer and Lemeshow, 2000).

However, it is important to note that when the dependent variable consists of more than two categories and these categories in the dependent variable do not have intrinsic ordering, a multi-nominal logistic regression (MLR) model should be applied as a type of logistic regression model. The basic concept of MLR is built on a binary logistic regression model but the MLR model allows simultaneous comparisons of more than two response categories within a dependent variable when measuring the relationships with a set of independent variables. In addition, there is no ordering nature within the category of dependent variable. MLR modelling can be interpreted as an extension of the logic regression model. Therefore, this research uses the MLR model. With the dependent variable which is three distinct labour groups, this research aims to estimate the main driving factors that distinguish the different features of the three labour market segments. Chapter 7 provides more details on the variables used in the analysis.

Measures of relative effect: the risk ratio

In binary logistic regression, odds ratios are used to compare the relative odds of the occurrence of the dependent variable given a set of independent variables. In other words, in a simple logistic regression model the exponential function of the regression coefficient is presented with the odds ratio associated with the exposure of every one-unit increase in the dependent variable (Szumilas, 2010). In the MLR modelling, the exponentiated coefficients are, however, more accurately described using relative risk ratios as the outcome data has more than two categories (Blizzard and Hosmer, 2007). Similar to odds ratios, the relative risk ratios can be used as an effect measure. However, relative risk provides the ratio of an event in the experimental group divide to that in the reference group. Thus, when a relative risk ratio is 1, there is no difference in risk between the experimental and reference group. If a relative risk is smaller than 1, the event is less likely to occur in the experimental group than the reference group while if it is greater than 1, the relative probability of occurrence in the experimental group is therefore bigger than the reference group. For example, in the theory that education intends to help people to occupy a secure position in the labour market, a relative risk of more than 1.0 confirms the efficacy of education. However, there can be many pair-wise contrasts to consider in multi-nominal regression modelling. Thus, it would be far easier to interpret the effects of a predictor on each outcome category to some extent, rather than a contrast between two categories (Leckie, 2013).

Multi-nominal logistic regression modelling

As described, an MLR analysis is an extension model of the logistic regression analysis with multi-nominal distribution. Consider a variable, Y_i, which may take one of the discrete values from the multi-nominal options which can be indicated as 1, 2,..., J. When i-th response in Y takes the j-th category, the probability equation can be denoted as,

$$\pi_{ij=}Pr\{Y_i = j\} \tag{12}$$

In addition, as the response categories are assumed to be mutually exclusive and exhaustive, the sum of the probability is 1. The equation for this is,

$$\sum_{j=1}^{J} \pi_{ij} = 1 \tag{13}$$

Here, it is important to note that when the various response categories in the dependent variables are added up, the total becomes the number of cases of data which can be denoted,

$$\sum_{j=1}^{J} y_{ij} = n_i \tag{14}$$

Thus, the probability distribution of Y_{ij} in the multi-nominal distribution given the total n_i can be written as a representation of the number of responses for the i-th group that fall in the j-th category with the total number of cases n_i, which can be denoted as:

$$\Pr(Y_{ij}ij) = \begin{pmatrix} n_i \\ y_{i1} & \cdots & y_{iJ} \end{pmatrix} \pi_{i1}^{y_{i1}} \ldots \pi_{iJ}^{y_{iJ}} \tag{15}$$

Based on these assumptions, the logit of the MLR model can be represented by the equation,

$$\eta_{ij} = \log \frac{\pi_{ij}}{\pi_{iJ}} = \alpha_j + x_1 \beta_1 + \cdots + x_i' \beta_j \tag{16}$$

where α_j is a constant and β_j is a vector of regression coefficients, for $j = 1, 2,..., J$-1. Here, we assume that the log odds in logit analysis are the natural complement of ordinary linear regression. Also, the response category of the dependent variable is multi-nominal instead of binary so we have J-1 equations instead of 0. The binary logistic regression equation is a contrast between 0 and 1 while the J-1 multi-nominal logit regression equations contrast each of the dependent variable category 1, 2... J-1 with category J. The reasons that J-1 equations are needed here is to explain a variable with J response categories.

The MLR model can be also analysed with the original probabilities π_{ij} instead of the log odds. This equation can be denoted as:

$$\pi_{ij} = \frac{\exp\{\eta_{ij}\}}{\sum_{k=1}^{J} \exp\{\eta_{ik}\}} \qquad (17)$$

However, the difference in conducting the original probabilities from the log-odds is for j=1, 2...,J instead of J-1.

4. Conclusion

In this chapter, I describe the main data source used in this study, namely, BHPS and Understanding Society as well as the methodologies used in the analytical chapters namely latent class, latent transition and multi-nominal logistic regression. As this research aims to investigate features of labour market divisions in the UK over the last 20 years, the panel data set that is available for the UK labour market – BHPS (1991-2008) and Understanding Society (2010-2011) – are selected. In terms of exploring the distinctive patterns, features and main determinants of labour market divisions, various methods outlined above allow this thesis to answer the three research questions stated earlier in Chapter 1. I describe what these methods entail and their respective advantages for the analysis done in the following chapters. Through the use of latent class analysis, this thesis is able to examine how the UK labour market has been divided into different labour segment and investigates this pattern over the last 20 years. Latent transition analysis will provide the substantial evidence to measure transition probabilities between the labour segments over the last 20 years. Lastly, multi-nominal logistic regression analysis allows us to observe the main driving factors to divide the UK labour market. In particular, these methods and techniques provide an empirical investigation into how and to what extent the UK labour market has been divided over time and its impact upon the various labour groups.

Nevertheless, the methods and techniques outlined in this chapter do have limitations. As the study is based on the available panel data, the choice of variables to measure the labour market segmentation/dualization can be relatively limited as the data is required to be available across

the time period between 1991 and 2011. Panel attrition is also one of the drawbacks for the longitudinal analysis. The research is dependent on the employed group for twenty years, some of those subjects will no longer be able to participate. This cuts down the useable data and respondent number. This will also lead to disadvantages in itself, that the long-term transition analysis will then follow the specific age cohort with the features of latent transition analysis. The detailed information will be further elaborated in each analytical chapter.

Chapter V. Has dualization emerged? The pattern and characteristics of labour market divisions over the past 20 years

1. Introduction

The first question examined in this thesis uses an empirical measurement of the divisions in the UK labour market for an assessment of the exact patterns and characteristics of segmented groups. While there have been a great number of studies in the area of labour market divisions, many of them have focused on evaluating a specific theoretical concept of division, such as the division in the labour market between those in employment and those who are not (e.g. Lindbeck and Snower, 1988, Coe, 1990) or more broadly the divide between those in permanent, full-time jobs and those in atypical employment or the unemployed (e.g. Rueda, 2007, Palier and Thelen, 2010). As most studies are restricted to an investigation of the pre-defined patterns and features of divisions, a clear and robust empirical exploration of labour market divisions at individual country level has not been considered in enough detail. In particular, an ever increasing number of studies on dualization in this context have emphasised the growth of dual patterns of division, choosing to focus on continental European countries (e.g. Eichhorst and Marx, 2012, Palier and Thelen, 2012). As a result, little attention has been paid to the UK with regard to this matter. This might be due to the assumption that the UK labour market is less likely to be dualised or segmented than its Continental European counterparts. However, this does not necessarily mean that the UK has just one competing labour market. Earlier studies have attempted an empirical examination of the UK as an example of an economy in which labour market segmentation patterns can be observed (Goos and Manning, 2003, Marsden, 2007). However, an empirical examination of the divisions in the UK labour market has not been a feature of more recent studies, including the dualization literature specified above. While Tomlinson and Walker (2012) investigated the divisions in the respective labour markets of Germany and the UK, their identification of labour divisions was again based on the theoretical concept of dualization (different types of employment contracts). Furthermore, their study places greater emphasis on identifying the relationship between the outsider and poverty.

The aim of this chapter is, thus, to develop an empirical exploration of the divisions in the UK

labour market, focusing on the employed population over the last two decades (1991-2010) and an examination of possible dividing patterns and characteristics of divisions. This will be done by addressing a composite measurement model reflecting on existing theoretical literatures. The chapter begins by addressing the question as to whether the UK has just one competing market or a segmented labour market. Secondly, if the market is divided I will attempt to identify the number of divided labour groups and assess the distinctive characteristics of each group. Lastly, I will examine whether the pattern of division has deepened or widened over the last 20 years.

The chapter is structured as follows. In the next section, I will assess the theoretical understanding of labour market divisions to derive a composite measurement model. In the third section, I will explain the method to identify UK labour market divisions, called latent class models, and the observed (dependent) variables obtained from BHPS (1991-2008) and Understanding Society (2010). Here I describe the reasons behind the choice of the dependent variables applied in the analysis, based on theoretical and methodological considerations. The fourth section will include the analysis outcome and the robustness testing for the measurement model fit across the time period between 1991 and 2010. The cross-time comparison of labour market divisions in the UK over the last 20 years and their distinctive patterns and characteristics will also be explained in the fourth section. The conclusion will follow in the last section.

2. Measuring the divisions in labour force: A theoretical understanding of division

Over recent years, rapidly developing literature termed dualization theory has suggested a growing trend towards the division of the workforce between insiders and outsiders. Much dualization literature conceptualises division with a binary pattern. Those who have permanent and stable full-time jobs are described as insiders. By contrast, workers in atypical forms of employment or the unemployed, whose work characteristics deviate from the insiders, are defined as outsiders due to their precarious employment status. Hence, the definition of "outsiderness" in dualization literature is not just bounded to unemployed individuals but also includes those in involuntary part-time employment (less than 30 hrs per week involuntarily) and non-permanent employment (those on contracts of limited duration), such as seasonal,

temporary and fixed contacts (Rueda, 2007, Emmenegger et al., 2012, Häusermann and Schwander, 2012, 2012). Such an argument gains credence with the growth of atypical employment across many advanced industrial countries in recent decades. This depiction provides the assumption that wage earning members of the workforce, particularly those with atypical employment contracts, are at risk of becoming outsiders, considering the increasing employment instability observed in most Western societies.

However, the division of the labour force is not a recent issue within labour market literature (Schwander and Häusermann, 2013). Studies in dual and segmented labour market theory emphasised the dual pattern of divisions among the workforce in the 1970s in the US (Doeringer and Piore, 1971, Reich et al., 1973, Gordon et al., 1982). These literatures focus on income and working conditions among workers and analyse employment (in)stability and income (in)security in view of the formation of a primary and secondary labour market. Similarly, following a sharp increase of unemployment rates after the oil shock in the early 1980s, and continued high unemployment levels in the 1980s in the US, Lindbeck and Snower (1988) examined the division in the labour market between the employed (named as insiders) and the unemployed (outsiders). In their later studies, the scope of those termed as outsiders has expanded to workers with part-time or temporary employment contracts, but their view on distinguishing the division of labour is consistently focused on employment (in)stability (Lindbeck and Snower, 2001, 2002).

Thus, it can be noted here that these literatures on the division of the labour force have commonly highlighted employment stability as one of the core characteristics of 'outsiderness', particularly with the expanded atypical nature of employment contracts across countries in the West. However, there are still varied definitions and measurements on the divisions in the labour force within theoretical literatures. This is especially true with regards to income insecurity. The dual labour market and segmented labour market theories have emphasised the importance of income insecurity as one of their main indicators. This is due to the fact that wages impact an individual worker's current labour market position and are closely associated with one's living standards and subsequent cost of living. Especially low-paid jobs have increased with the rise of atypical employment, which go hand in hand with the emergence of lower wages in recent decades. Therefore, despite the fact that there are differences in

conceptualising the issue of divided labour markets among the existing literature, employment (in)stability and income (in)security have often been defined as important indicators in an analysis of the divisions in the labour market. The nature of employment instability is generally measured by observing different forms of employment contracts (i.e. part-time or temporary contracts versus full-time and permanent contracts) and income insecurity is usually discussed in terms of low pay threshold.

However, Schwander and Häusermann (2013) have lately criticised the use of employment and income characteristics in defining the division of labour as these characteristics may change frequently during one's working life. This is related to the fact that employment contract indicators only show cross-sectional aspects of employment while occupational class analyses can provide long-term perspectives of employment trajectories. According to them, occupational profiles can provide a clear view of the insider-outsider divide, given that occupational class can effectively trace employment biography. Furthermore, they claim that an occupational category would be of greater use in distinguishing the characteristics of divisions between the insiders and outsiders than employment contract status. In addition, although it is rather broadly described, the dual and segmented labour market theory argues that the working conditions of different occupations have affected the division of labour market (Doeringer and Piore, 1971, Reich et al., 1973).

Furthermore, recent literature in dualization addresses the division of the labour force by including the accessibility of the welfare system as a further category for evaluation (for example, Emmenegger et al., 2012, Seeleib-Kaiser et al., 2012). Considering that many social protection systems, particularly occupational pensions, are closely linked with one's occupational position and income status during one's working age, the dualization in the labour market may translate into the social protection setting. For example, being an outsider in the labour market may affect a worker's position in the welfare system, especially considering their lack of labour rights in the workplace. Schwander (2010) discusses the development of dualization in the pension system, highlighting pensions as one of the most significant social protections for future income sources and examines how actual employment patterns and features become their translation into welfare entitlements in future transferring.

Nevertheless, most studies discuss the features of labour market divisions primarily based on theoretical understanding and its use in empirical research is rather ad hoc; it is mainly based on proxies or the untested assumptions of the authors involved. This can be particularly problematic when considering the situation that many of the divisions cited may stand in some countries but may not necessarily reflect the division patterns in others. For example, Beigert (2014) measures the insider/outsider divide between the UK and Germany and concludes that the stability of division is much stronger in Germany than in the UK. However, he measures the divisions based on the theoretical framework of dualization (non-employment and atypical employment versus full-time and permanent employment) without considering the different characteristics of the labour markets and institutional settings of the two countries. Furthermore, there is a clear lack of effective and detailed empirical analysis that examines the division of labour markets with the combination of the various indicators I have discussed above such as income, occupational characteristic and occupational pension coverage.

Moreover, much literature highlights the persistent feature of division in the labour market over time. This is partly due to the fact that there is a limited chance for transition between the divided groups (e.g. Reich et al., 1973, Lindbeck and Snower, 1988). More recently, dualization studies further argue that the gap between labour segments is becoming more pronounced in many advanced countries over time (Häusermann and Schwander, 2012, Rueda, 2014). However, there is a limited number of empirical works that track the pattern of division in the labour market over time. Rather, many studies focus on the institutional arrangements or labour market policies that might have influenced the increasing divisions in the labour market (Palier and Thelen, 2012, Seeleib-Kaiser et al., 2012). Hence, empirical research which can capture actual patterns of labour market division with a long-term perspective is pertinent for this analysis of labour market division.

To sum up, there have been many meaningful theoretical studies on the issue of labour market divisions and the empirical works that test such a theoretical framework (e.g., Bulow and Summers, 1986, Blanchflower et al., 1990, Coe, 1990, Häusermann and Schwander, 2012, Schwander and Häusermann, 2013). Nevertheless, using a pre-defined theoretical definition of division patterns may have the potential limitation of being unable to capture the different patterns and characteristics of divisions in the labour market across time and space, i.e.,

countries. I argue that the pattern of labour market divisions and the characteristics of each labour segment can be heterogeneous between different countries due to the institutional contexts they are formed in and which may affect varying patterns of division across time. Thus, this chapter attempts to measure patterns and characteristics of division in the UK with the viable indicators defined from different literatures. From this, I aim to identify the distinctive characteristics of division in the UK and to contribute empirical evidence to form a greater understanding of the existing theoretical model on labour market divisions.

3. Latent class analysis and variable construction

3.1 Latent class analysis

In order to examine exact the pattern of labour market divisions and characteristics of divided groups over the past two decades in the UK, an exploratory latent class model has been applied. Latent class models follow a statistical method which identifies the presence of an unmeasured variable within a set of multivariate categorical data (McCutcheon, 1987, Mejlgaard and Stares, 2012). In other words, latent class analysis (LCA) enables us to find a number of exhaustive and mutually exclusive subgroups of individuals defined as the unobserved latent factors (labour market divisions) from a set of observed variables. Latent class models can be considered as logistic regression models, with a number of observed variables and a single unobserved variable which has a certain number of unordered categories (Mejlgaard and Stares, 2012). Discovering the latent groups rests on measuring different co-variances of observed variables, as each latent group tend to share similar characteristics. In the analysis, these characteristics can be represented with different degrees of employment (in)stability and income (in)security. An increasing number of studies in the field of social science use latent class models to derive meaningful groupings classified in individuals' working conditions (Van Aerden et al., 2014), labour market opportunities (Clogg et al., 2001) or living conditions (Rose et al., 2009). Thus, I start from the idea that there is not just one competing market, but a divided labour market which can be identified by different segments of the labour force. The analysis also models the data as a finite mixture of distribution that each individual is placed on one of the latent groups (Dean and Raftery, 2010), so that the size as well as the characteristics of each labour segment can be estimated.

However, it is important to note here that there are several types of latent class models. If an analysis focuses on a singular year of labour market division with cross-sectional data, a classical latent class model for categorical indicators is suitable (Magidson and Vermunt, 2003). Yet, since this analysis focuses on examining the labour market divisions across the different points in time with the cross-sectional data from 1991 and 2010 and compares the divisions in cross-time, a multi-group latent class model is applied (McCutcheon, 2002). Using different time points as a covariate in the pooled data set from 1991 to 2010, I can formally assess a general pattern of labour market division over the last two decades and the statistical significance of the variations in the pattern of division by comparing the results from the different time points.

In order to measure the division of labour force accurately, it is vital to select the correct indicator variables, since the results of an analysis are heavily dependent on the choice of variables. If unnecessary variables are included in the model, removing them can improve the model fit, and the classification of performance as well as the precision of parameter estimates (Dean and Raftery, 2010). However, omitting relevant variables in the measurement model can affect a model fit or generate the wrong number of classes. Thus, it is crucial to choose the relevant indicator variables in the model. In terms of selecting the variables, reflecting the theoretical models is often motivated. Nevertheless, there are few empirical studies which describe the ways in which specific country-level characteristics influence individual-level constructs, i.e., how UK labour market characteristics are different from others and how the distinctions in the UK labour market affect individual working populations and the divisions in the labour market. Given that the analysis is exploratory rather than confirmatory, I attempt to develop a measurement model reflecting the existing theoretical basis as well as examining the distinctive features of the UK labour market. Through evaluating model fits and the results of latent grouping arrangements, a decision can be made as to which indicator variables most accurately signify the characteristics of UK labour market divisions.

3.2 Variables construction

As discussed above, an abundance of definitions on divisions in the labour force are circulating,

particularly in the social sciences and especially among political scientists who have repeatedly insisted on a division of distinction on a theoretical basis. Nevertheless, there are a limited number of studies that empirically examine the divisions of a country with a holistic view for a better understanding of the pattern of division as well as its characteristics over a long-term period. Thus, this chapter attempts to investigate the actual patterns of labour market division with empirical data concerning the UK only, using a wider definition of division. As much of the existing literature notes that employment (in)stability and income (in)security are key elements to measure the growing disparities in labour divisions, I include the variables that can indicate different levels of income and employment characteristics. These are income threshold (low wage), occupation strata and the accessibility of social security (in this case, occupational pensions), as well as frequently used definitions of employment contract status -i.e. temporary and part-time contracts.

Firstly, much of the dualization literature which is built upon the structure of insider/outsider theory highlights that the different degrees of employment stability that the working population possesses constitute the insider-outsider divide. Thus, atypical employment status has regularly been applied as a classic indicator to show the precariousness of unstable work. Thus, I include atypical employment conditions as one of the indicator variables to measure labour market division. However, involuntary part-time employment and temporary employment, which are often illustrated as atypical employment, have rather different conditions of employment status: working part-time with a stated desire for full-time work and working within a limited employment contract respectively. To clarify the difference in labour market vulnerability between these two precarious forms of employment, I analyse atypical employment with two separate variables, i.e. involuntary part-time employment and non-permanent employment. The questions used in BHPS and understanding society to measure the involuntary part-time employment are made from two variables; satisfaction with hours worked and working full-time or part-time. For the former, individuals could answer seven point scale from not satisfied at all (1) to completely satisfied (7). The latter is measured dichotomously using two answer categories, i.e., working full-time or part-time. I combine these two questions and define those on involuntary part-time work with respondents who were in part-time work and answered that they were not satisfied with their working hours (less than three out of a scale of seven). The other category in the involuntary part-time variable features those who are in full-time

employment or voluntary part-time employment (those who are in part-time employment but happy with their working hours). For non-permanent employment, I use the question of regarding whether employees' current employment positions are based on permanent or non-permanent as binary options.

While income aspect is not regarded as a main element to measure divisions in the labour market in dualization literature such as works by Rueda (2006, 2007) or Emmenegger et al. (2012), other literature, for example, dual and segmented labour market literature, highlights the importance of wage perspective for delineating divided labour groups (e.g. Reich et al., 1973, Gordon et al., 1982) More recently, Häusermann and Schwander (2012) also argue that the widening gap in income levels can be interpreted as a defining feature to distinguish the division of labour force. Furthermore, there has been extensive research and evidence on the extent of low wages (Sloane and Theodossiou, 1996, 1998, Cappellari, 2002, Cappellari and Jenkins, 2004) and the limited chances of upward mobility for low-income strata in the UK (Pavlopoulos, 2013), which have been discussed as influential factors of the general rise of labour market divisions (Branden, 2009). For example, the probability of transition from low to higher pay in the UK labour market is lower than that of Germany (Pavlopoulos et al., 2012). As a result, I expect income levels, especially low wages, to be a significant indicator in explaining the division pattern in the UK market, and have therefore included it as part of the measurement model. Thus, the analysis includes information on wages, more specifically with low pay against non-low pay to distinguish the influence of low pay characteristics on the divisions. I follow the definition of the Resolution Foundation (2012) on low pay - hourly wage below two-thirds gross median hourly pay for all employees. The (annual) median hourly wage is extracted by first generating annual pay, measured through the use of the usual gross pay per month variable *12. This is then divided by the annual hours worked, generated through the normal working hours per week variable *52. Then, two-thirds of the median hourly wage is calculated from the hourly wage variable and those who fall under this amount are considered to be workers on low pay and those who are above this threshold are categorised in non-low pay category.

Occupational classes are also included in the measurement model. As stated above, occupational profiles are often used to measure labour market divisions given that each

segmented labour groups are more or less likely to share similar labour market risks. In a recent study, Schwander and Häusermann (2013) argue that occupational profiles can explain the insider-outsider divide more reliably than precarious employment indicators. This is due to the fact that occupational class can trace the employment trajectories of individuals, and thus provide long-term perspectives of employment paths, whereas employment contract types and income levels only take the worker's position at one given time into account. In order to measure the different strata of occupational positions, I use the International Standard Classification of Occupations (ISCO) variable: the present job variable, which consists of nine major groups, except the armed forces. But this particular occupational grouping is found to be too specific to capture the occupational biography of individual workers. Thus, the variable is recoded into four major groups, as put forward by Schwander and Häuserman (2013)'s and supported by the ILO's four occupational classes (ILO, 2012). The resulting group includes: Professional/Managerial, Associate Professional/Associate Managerial, Generally/Vocationally Skilled, and Low/Unskilled Workers. Table 5.1 presents the categorisation of occupational class variable more in detail.

In addition, the divided features are also considered in social security/ policy setting. Dualization scholars including Palier and Thelen (2010) and Emmenegger et al. (2012) note that dualization has not only been restricted to labour market positions in terms of contract types, it has also led to the dualization of social policy. In the UK, occupational pension coverage is particularly important to consider, especially in its role of securing income for workers in the third age of their lives. As noted in the previous chapter, the replacement rate of the basic state pension scheme is fairly meagre as the state pension system is based on the liberal welfare regime. Hence, occupational pensions have a more substantial effect on income during retirement than other countries (Blake, 2004, Schwander, 2010). What is more, access to occupational pensions is directly linked to one's employment status, unlike other social security benefits, such as unemployment benefit (job Seeker's Allowance), which has a stronger means-tested element to it. Thus, occupational pension access provides an insight into the future income security a worker can gain through their employment. In other words, I expect that unequal access to occupational pensions can contribute to the increasing dualization in the British welfare system. Thus, it can be an important indicator to include for distinguishing labour market positions within the UK market. In terms of occupational pension coverage, the

variable is grouped in the dichotomous category with the variable asking respondents if they have an occupational pension based on the condition that an employer runs an occupational pension scheme. Those with employers who do not run an occupational pension scheme, or those who are not covered by the pension scheme even when the employers do have one, are considered to be those without an occupational pension.

Table 5.1. Classification of occupation, based on ILO's ISCO-08 (2012) and Schwander and Häusermann (2013)

Occupation categories	
Professional/managerial	11 Legislators and Senior officials
	21 Physical, mathematical and engineering science professionals
	22 Life science and health professionals
	23 teaching professionals
Associate professional/managerial	13 General Managers
	24 Other professionals
	31 Physical and engineering science associate professionals
	32 Life science and health associate professionals
	33 Teaching associate professionals
	34 Other associate professionals
Generally/vocationally skilled	41 Office clerks
	42 Customer service clerks
	51 Personal and protective services workers
	52 Sales and services elementary occupations
	71 Extraction and building trade workers
	72 Metal, machinery and related trade workers
	73 Precision, handicraft, printing and related trades workers
	74 Other craft and related trade workers
Low/un-skilled	61 Market-oriented skilled agricultural and fishery workers
	62 Subsistence agricultural and fishery workers
	81 Stationary-plant and related operators
	91 Sales and service elementary occupation
	92 Agricultural, fishery and related labourers

Career prospects and job tenure have been also considered as indicators in an analysis of the divisions in the labour market, as such factors may capture the characteristics of precarious employment. For example, the literature on labour market segmentation delineates the characteristics of 'secondary labour market' with a limited chance of work advancement or a short length of tenure (Piore, 1975). Tomlinson and Walker (2012) also suggest that limited career advancement opportunities reflect 'dead-end jobs', which highlights one of the features of outsiderness. However, those components are not included in the final set of observed (dependent) variables to measure the division of the labour market in the UK. One reason that I do not include the tenure and/or career prospect variables is that the group characteristics of people with less than one year's tenure in employment and/or people with career advancement are rather heterogeneous; i.e., the group includes marginalised workers (with low wages, low levels of occupation and not having access to occupational pensions) alongside a big proportion of workers with better working conditions (workers with higher wages, higher occupation strata and having access to occupational pensions). Thus, it does not seem to capture the discrete characteristics of labour segments, but instead captures workers' mobility patterns in changing jobs or careers in the UK. Furthermore, using the variables of fixed term contracts and less than one year tenure together in the measurement may be interpreted as putting extra emphasis on the short term duration of contracts, compared to other aspects included in the analysis, and may distort the analysis results. Thus, the variables on tenure and career advancement are not included in the final model.

To summarise, the analysis includes five indicator/observed variables i.e. atypical employment status (involuntary part-time and temporary employment contracts), occupations, wages and occupational pension coverage. I start from the idea that the UK labour market is not just one competing market but a divided labour market which can be characterised by different levels of employment stability and income security, which are mostly distinguished by the five indicator/observed variables below (see Figure 5.1.). As the analysis aims to identify the distinctive patterns and characteristics of labour segments in the UK between 1991 and 2010 and to examine the variations in the patterns of division across different time points, the time aspect will be also considered.

Figure 5.1. Multi-group latent class model of labour market division
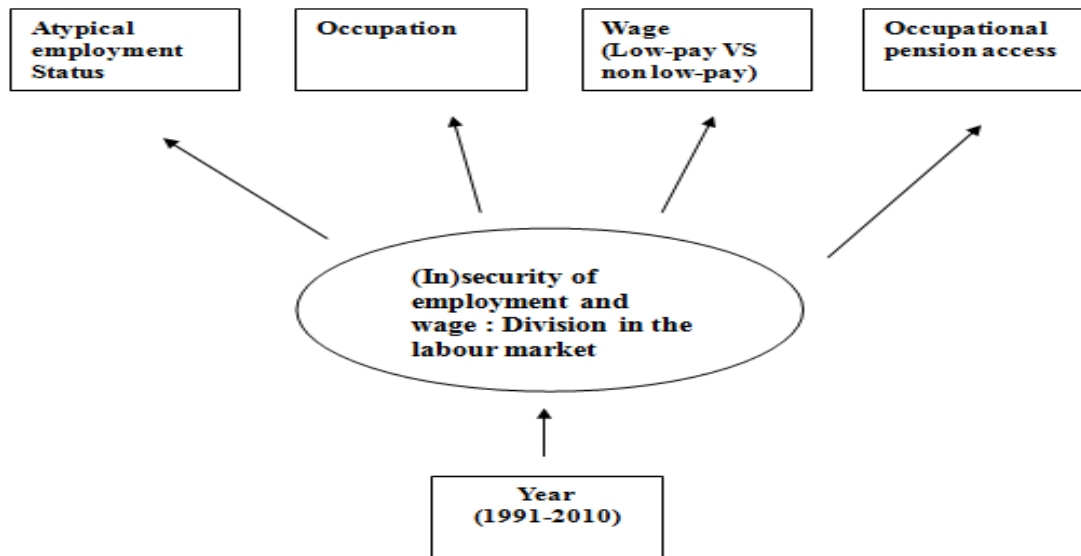
4. Analysis results

4.1 Descriptive analysis result

In this section, I look at the descriptive statistics of the five indicator variables developed in the section above in order to view the main features of a collection of variables. Table 5.2 provides frequencies for these items for the past two decades. Of the various years, I have presented the results from 1991, 1995, 2000, 2005 and 2010, with a 5 year gap in between each set of results, with the exception of the first two groups of results, which are four years apart. 1991 and 2010 are the first and last year where the data is available (the BHPS and subsequent Understanding society data has been collected) and both years are in the period of economic downturn due to the two recessions of the early 1990s and late 2000s. The time points of 1995, 2000 and 2005 are in a period of relative economic stability after the crisis in the early 1990s and benefit from the economic growth which took place between the economic recessions described above.

There were no significant changes observed across the five different time points in the investigation. During the analysed time frame, the numbers of non-permanent workers and involuntary part-time workers have not changed much and their proportions are rather limited,

at approximately 6 per cent and 3 per cent respectively in the UK labour market. With regard to low wages, the proportion of low-paid workers has shown a slight change over time. During the post-crisis year, the proportion of low-paid workers increased while its size has declined slightly during the time points of the early and mid 2000s. In terms of occupational distribution, the professional/managerial group increased slightly while the generally/vocationally skilled and low/unskilled group decreased slightly. This may reflect a decline of the manufacturing industry and expansion in the skilled service sector within the UK labour market. Nonetheless, the generally/vocationally skilled group is the largest group within the occupational classes. A gradual increase was observed in terms of occupational pension coverage across the time frame under scrutiny. In 1991, half of the total employees in the study were not covered by the occupational pension programme but such a proportion decreased after 1991, and around 54 per cent of employees had occupational pension accessibility in 2010. Such an increase on the occupational pension coverage reflects the active effort of expanding occupational pensions in the Labour government during the 2000s.

In summary, atypical employment status – i.e., the size of temporary employment and involuntary part-time employment - has been rather limited, according to observations from the analysis. As a result, they may not be a considerably significant indicator to explain the characteristics of labour market divisions in the UK. On the other hand, a relatively large and/or growing proportion of the workforce is found in low-paid employment and in the low occupational groupings. It is also noticeable that 46 percent of the employed labour force is still not covered by an occupational pension via work in 2010, although its coverage has gradually expanded over time. From these results, the division of the UK workforce may not be distinguished by the more frequently used definition of precariousness of employment - i.e., contract status but with other working conditions – such as wages, occupational levels and occupational pension coverage.

Table 5.2. Basic frequencies of indicator variables between 1991 and 2010   (% response)

Variable		1991	1995	2000	2005	2010
Atypical employment						
Permanency of contract	Permanent	95	96	96	96	94
	Non-permanent	5	4	4	4	6
Number of hours	Full-time and Voluntary part-time	98	98	98	98	96
	Involuntary part-time	2	2	2	2	4
Pay level	Non-low pay (> 2/3 of median hourly wage)	79	80	84	83	81
	Low pay (> 2/3 of median hourly wage)	21	20	16	17	19
Occupational profiles	Professional/Managerial	18	20	21	22	24
	Associate professional/managerial	18	18	20	22	19
	Generally/ vocationally skilled	45	44	43	43	42
	Low-unskilled	19	18	16	14	15
Occupational pension coverage	People who have occupational pension through employment	50	50	52	53	54
	People who do not have occupational pension through employment	50	50	48	47	46

4.2 Multi-group latent class analysis result

In this section, I explore the patterns of labour market divisions and characteristics of the divided groups over the last two decades using the multi-group latent class model.[3] As the indicator variables contains 64 different response patterns from the five different observed variables (2*2*2*4*2=64), the analysis allows for a decision on how to group the 64 response profiles into a much small number of classes of response. In addition, the estimated conditional item response probabilities that explain the probability of a particular response to a particular item, conditional on latent class membership provide the characteristics of each labour segment.

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[3] I also informally test the classical latent class analysis each year in order to capture the broad pattern of division at each time point to compare with the multi-group latent class model.

By conducting an exploratory latent class analysis with an increasing the number of classes, it can be observed that there are clearly elements of divisions existing in the UK labour market between 1991 and 2010. Table 5.3 describes fit statistics for a set of joint period models between 1991 and 2010, marked in bold in the best model: the three-class model. From the relative fit statistics, the AIC and BIC figures improve by increasing the number of classes. However, the two-way standardised marginal residuals do not significantly decrease from the three-class model. In addition, the four and five class model do not provide a clear interpretation for defining the characteristics of labour segments as the latent distribution in some of the subgroups in the four-class and the five-class solution does not show relatively strong homogeneity. In other words, the conditional item response probabilities for the four-class and five-class solution are not indicated by values close to 0 or 1 (Hopfer et al., 2013).[4] This, in practical terms, means that it is difficult to distinguish between the characterisation and labelling of latent class profiles in these cases. Since both statistical and practical considerations indicate that the three-classes method is found to be most reliable, the three-class solution is, therefore, chosen to be the preferred cross-time point (1991-2010) model of labour market division.

However, the three-group result deviates from the assumed labour market division patterns posited by scholars of dual labour market theories and dualization theory where a two-group division is expected. Nevertheless, such a varied pattern of labour market segmentation has been found in previous studies in other countries. For example, Blossfeld and Mayer (1988) – using indicators of occupational characteristics – suggested that the West German labour market consisted of four different labour groups, and Jessoula, Graziano and Madama (2010) identified three labour segments in the Italian labour market using indicators of the different types of employment contracts and their job protection levels.

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[4] For example, one subgroup in the four-class solution do not specifically show strong homogeneity with the occupational pension item (involuntary part-time=0.01, non-permanent=0.00 , low wage=0.08 and not having occupational pension=0.48). Additionally, in the five-class model, two subgroups do not specifically show the strong homogeneity with the combination of non-permanent, low wage and occupational variable. The occupation variable is not considered on this matter as it is not binary variable.

Table 5.3. Fit statistics for joint cross-wave (year) models between 1991 and 2010

No. of classes	L2	d.f.	P (bootstrap)	AIC	BIC	% two-way standardised marginal residuals>4				
						All	Mean	Median	Min	Max
1	-	-	-	460775	460841	89	-	-	-	-
2	476	48	<.001	438278	438418	64	40	39	21	55
3	**461**	**40**	**<.001**	**437429**	**437644**	**46**	**39**	**39**	**21**	**52**
4	105	32	<.001	437084	437375	41	37	38	23	48
5	56	24	<.001	436987	427353	38	37	38	23	50

Considering that the UK labour market is not one but is divided into three different segments over the last 20 years, Table 5.4 presents the best joint model across the time period between 1991 and 2010. Each latent group is represented by a column and each item response by a row. The distinctive characteristics that describe the classes are marked in bold. In the first group, the respondents are most likely to have stable employment positions, since the probabilities of being in permanent employment and full-time or voluntary part-time employment are both 99 per cent. They are also very likely to have an income above the low pay threshold with a probability of 99 per cent. On the subject of occupational profile, people in this group seem to be in either high or vocationally skilled groups (the chance of being in the professional/managerial, associate professional/managerial or generally/vocationally skilled class is 32, 23 and 35 per cent respectively). When asked whether they are under the occupational pension scheme, the majority of people are likely to say "yes" with a probability of 83 per cent. All in all, I labelled this class as the "Insider" group of the labour market as most people in this class are very likely to be securely employed, have an adequate income, and a relatively favourable occupation as well as an occupational pension – all characteristics of the insider class as defined by the literature.

The next class, namely the "outsider" group seems to be distinguishable in respect of wages and occupation status, as well as the occupational pension coverage variables. Almost all

people in the outsider class seem to be in low-paid work with a probability of 100 per cent. In terms of occupational distribution, people classified in the "outsider" group are most likely to have a job in the generally/vocationally skilled or low/unskilled class (with a probability of 65 and 28 per cent respectively). Outsiders are much less likely to fall into the upper two strata of occupational grouping – professional and managerial positions. This group can also be distinguished by a very low probability of having an occupational pension programme, standing at just 17 per cent likelihood. Thus, the characteristics of the "outsider" group in the UK seem to be characterised by low pay, low occupational profile and limited engagement with occupational pensions. In terms of atypical employment, it is worth noting that the data for outsiders and insiders concerning involuntary part-time work or non-permanent contract employment is relatively similar. While the outsiders are more likely to be in involuntary part-time work than other groups, the probability is still low at only 7 per cent. As a result, outsiders in the UK have a 94 per cent probability of being in permanent employment positions. In other words, employment contract types seem less likely to explain the characteristics of insiders and outsiders in the UK. Such results can be partly explained by the limited numbers of workers in involuntary part-time or non-permanent employment in the UK labour market. However, it should be noted that the relative likelihood of having atypical employment workers is still much higher in the "outsider" group compared to the "insider" class (7 times as likely to be in non-permanent and involuntary part-time employment contracts).

The last class (the last column of figures) represents an intriguing revelation in the analysis. This class groups people with the highest level of temporary employment contracts and those least likely to have an occupational pension among the three latent classes. This group is 1.5 times and 10 times more likely to be in temporary employment compared to the "outsider" and "insider" class respectively, although the absolute likelihood is still relatively low - with approximately 10 per cent. Furthermore, the workers categorised in this group have almost no chance of having occupational pensions through their jobs (almost 100 per cent). This combination underlines that this group tends to be more insecure than the previous "outsider" group regarding future income and job security. However, those in this group are more likely to be in better occupational statuses than the "outsider" group, given that they are highly likely to have an occupation in a generally/vocationally skilled category and earn above the low pay threshold. In other words, this group may not be in a particularly vulnerable position which

would affect the quality of their life immediately, but is highly likely to face dire consequences in future due to insufficient income and/or job insecurities. Thus, I label this group as the "future insecure" class.

Table 5.4. Results of item probabilities for a joint model across the time period between 1991 and 2010

Item/Response	Response probabilities for categories of items, conditional on class		
	Insider	Outsider	Future insecure segment
Full-time and voluntary part-time workers	0.99	0.93	0.97
Involuntary part-time workers	0.01	**0.07**	0.03
Permanent workers	0.99	0.93	0.90
Non-permanent workers	0.01	0.07	**0.10**
Non low-pay workers	**0.99**	0.00	**0.91**
Low- pay workers	0.01	**1.00**	0.09
Professional/managerial	**0.32**	0.01	0.10
Associate professional/ managerial	**0.23**	0.06	0.18
Generally/vocationally skilled	**0.35**	**0.65**	**0.50**
Low/Unskilled	0.10	**0.28**	0.22
Under pension scheme	**0.83**	0.17	0.00
Not belong to pension scheme	0.14	**0.83**	**1.00**

There are, however, indications that the presented set of models tends to have a poor model fit considering the results with two-way standardised marginal residuals.[5] Increasing the number of classes to five does not solve this problem. This might be partly due to the fact that the distribution of a latent class may not be stable over the different time points. In other words, the pattern of divided labour segments can be represented differently depending on cohort differences, particularly related to economic conditions or institutional changes. Thus, the time

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[5]A rough rule of thumb, if standard marginal residuals greater than four, it suggests a poor fit (Bartholonew et al., 2008)

covariant is included in the model to examine any changes in the distribution of latent classes over this period. The result shows that while there have been minor changes between the time points, there is good common ground with a relatively stable ratio of three labour segments over the period of time under analysis (see table 5.5). Also statistical fit, which is the average standardised residuals, have improved to 30 from 39. The size of the "outsider" group has remained the smallest among the groups, between 12 and 19 per cent, while the "insider" class represents the largest throughout the time period (54-63 per cent). The "future insecure" group stands between the "insider" and "outsider" group and presents as very stable in terms of size (23-27 per cent). The distinctive characteristics of each labour segment remain over time in this model. Thus, it is important to note that the insertion of time points into the model helps to improve the model fit and measures the pattern of divisions and the proportion of each segment more accurately.

Table 5.5. Estimated percentage in each class by year   (% of the total dependent employed)

Year	Insider	Outsider	Future insecure	Total N
1991	56.1	18.4	25.5	4,974
1992	57.2	17.5	25.2	4,756
1993	56.0	16.8	27.1	4,674
1994	54.2	17.1	28.8	4,639
1995	56.8	17.4	25.8	4,611
1996	57.4	19.0	23.5	4,741
1997	58.0	16.3	25.7	4,854
1998	59.4	16.1	24.5	4,882
1999	60.6	13.5	25.9	4,843
2000	59.3	15.1	25.6	4,823
2001	61.5	14.1	24.4	4,834
2002	62.5	13.7	23.8	4,713
2003	62.5	13.2	24.3	4,644
2004	63.1	12.1	24.9	4,626
2005	61.7	12.6	25.7	4,552
2006	62.0	13.1	24.9	4,507
2007	61.2	13.6	25.1	4,389
2008	62.8	12.9	24.3	4,239
2010	62.7	14.2	23.1	3,213

However, the poor model fit can also be due to the measurement model, which is formulated based on the theoretical literature of labour market divisions. This means that the observed

variables derived from theoretical literature may not be "relevant" indicator(s) in attempting to determine labour market division in the UK. Such features may also indirectly affect the model fit. Table 5.6 shows the model assessment statistics for various three-class models. As freeing intercepts and loadings in the atypical employment (involuntary part-time and non-permanent contracts) and occupation variables, the overall model fits improve. This means that parameters of atypical employment and occupation variables are allowed to be measured independently at different time cohorts. However, the standardised residuals are still larger than four and there are only slight improvements in the average standardised residuals by allowing a non-equivalent measurement.[6] This shows that it may not always be possible to find a model which is both practically simple and well-fitting from a theoretical perspective. However, it is important to re-emphasise that the main intention for these analyses is to evaluate the models to decide which observed variables signify the characteristics of UK labour market divisions more clearly, in keeping with their exploratory nature. According to the bivariate residuals which provide an overall summary of how well a model fits the observed joint distributions of pairs of the observed items (Magidson and Vermunt, 2003), the largest values involve within the involuntary part-time variable. This suggests that in the case of UK, involuntary part-time employment may not be a crucial indicator to explain the characteristics of each labour segment.

Table 5.6. Model assessment statistics for various three-class models

	Model	AIC	BIC	% two-way standardised marginal residuals>4				
				All	Mean	Median	Min	Max
	3-cl models:							
1	equivalent	437429	437644	46	**39**	39	21	52
2	separate	437170	437723	46	**30**	29	18	41
	Non-eq. in:							
4	Atypical employments (involuntary part-time and temporary emp.)	437025	438591	48	**25**	25	16	38
5	Atypical employments occupation	436885	438958	52	**19**	18	12	29

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[6] Allowing the non-equivalence model means here is the freeing of the intercepts and loading of atypical and occupation variables.

4.3. Robustness check of model selection

The overall statistics of bivariate marginal residuals show that the presented measurement model tends to have a poor fit, although there is not a specific rule of thumb to follow in model assessment for LCA (Kuha and Koustaki, 2013). Due to this, I test the fit of our model by removing the variable with large bivariate residuals among the indicator variables to check whether the model fit improves, and also whether it leads to a more accurate selection of classification performance. As the involuntary part-time variable has the largest bivariate residuals among the indicator variables, I exclude this variable in the model and conduct a new multi-group latent class analysis.

The result from table 5.7 shows that the model fit significantly improves by excluding the involuntary part-time variable. The standardised marginal residuals are lower than the outcome from the original model with the five indicator variables. In terms of selecting the number of labour classes, the residual statistics do not significantly improve from the three-class model while the AIC and BIC figures improve by increasing the number of classes. Furthermore, the four and five-class models do not show strong homogeneity, indicated by item response probability values close to 0 or 1 within their latent classes. This, in turn, makes an interpretation of the characteristics of labour segments difficult, and does not add additional insight into the latent subgroups. Consequently, the three-class solution is retained. By allowing the non-equivalence in individual items to check the association between the time points and indicator variables conditional on the latent variables, the model fit improves significantly. By applying different levels of measurement equivalence, the standardised marginal residuals decrease and the average residuals drop to below four in model No. 7. This enhancement is rather substantial compared to the outcome from the previous model with five indicator variables. Such results suggest that the involuntary part-time variable may not be a necessary indicator to explain the characteristics of each labour segment.

Table 5.7. Model assessment statistics for various models excluding the involuntary part-time variable

No.	Model	AIC	BIC	% two-way standardised marginal residuals>4				
				All	Mean	Median	Min	Max
1	1-cl equivalent	445455	445511	86	-	-	-	-
2	2-cl equivalent	423664	423786	56	39	42	8	61
3	3-cl equivalent	422901	423088	33	36	33	8	58
4	4-cl equivalent	422665	422918	28	36	36	11	61
5	5-cl equivalent	422639	422958	17	35	36	11	58
6	3-cl non-equivalent Contract type, wage	422245	423783	47	8	8	0	28
7	**3-cl non-equivalent, Contract type, wage & occ.**	**422200**	**424245**	**47**	**4**	**3**	**0**	**8**

However, the characteristics of labour segments become less clear since the model does not produce internally homogenous classes. This means in practice the item probability responses in each latent class are not close to 0 or 1. Table 5.8 shows the result of the item probabilities of each latent class between 1991 and 2010 with model 7 in table 5.7. People from the first latent class seem to be in the lower strata of occupation, particularly generally/vocationally skilled and low/unskilled groupings (in total 88 per cent), and are less likely to have occupational pension access through their jobs (97 per cent). This group is also more likely to be on temporary employment contracts compared to other groups. Furthermore, people in the first latent class are much more likely to be in non-permanent employment compared to the second and third latent class, (9 times and 3.3 times respectively) while the overall probability is still low at approximately 9 per cent. In terms of income, the workers in this group are the most likely to be in low pay comparatively but do not show strong homogeneity (low pay = 0.39). The second group tends to consist of people with a permanent employment contract (99 per cent), occupational pension accessibility (almost 100 per cent), and income above the low pay threshold (90 per cent) but with a lower level of occupational grouping, mainly

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generally/vocationally skilled (64 per cent) and low/unskilled (22 per cent). In the last latent group, the majority of people are most likely to be (associate) professional and managers (91 per cent) with permanent jobs (97 per cent) and income above the low pay threshold (almost 100 per cent). In addition, approximately 73 per cent of people in the third latent group are likely to have occupational pension accessibility. This suggests that this last group shares similar traits with the 'insider' group in the previous model.

Table 5.8. Results of item probabilities across the time period between 1991 and 2010 with four indicator variable

Item/Response	Response probabilities for categories of items, conditional on class		
	Latent class (1)	Latent class (2)	Latent class (3)
Permanent workers	0.91	0.99	0.97
Non-permanent workers	0.09	0.01	**0.03**
Non low-pay workers	**0.61**	0.90	**1.00**
Low- pay workers	0.39	**0.10**	0.00
Professional/managerial	**0.02**	0.05	0.54
Associate professional/ managerial	**0.10**	0.08	0.37
Generally/vocationally skilled	**0.61**	**0.64**	**0.09**
Low/Unskilled	0.27	**0.22**	0.00
Under pension scheme	**0.03**	1.00	0.73
Not belong to pension scheme	0.97	**0.00**	**0.27**

These results show that the characteristics of each latent group are largely distinguished by wages, occupational groups and occupational pension coverage, which are somewhat in line with the previous model. However, the features of latent groups have been changed without the involuntary part-time variable. Such features do not provide a clear interpretation and distinctive characteristics of each labour group, since the model is not internally homogenous. The previous model including involuntary part-time employment is more parsimonious in a manner that facilitates an easier interpretation of the results, both practically and theoretically. While the average residual statistics of the model with the involuntary part-time variable was greater than four, there is no rule of thumb as to how many are specifically acceptable (Mejlgaard and Stares, 2012) Furthermore, the practical interpretation additionally confirms

that the pattern and characteristics of labour market division are rather clearly presented when the involuntary part-time variable is included in the model. This implies that although the proportion of involuntary part-timers is relatively small and seems to affect the poor model fit, it clearly supports an evaluation of the characteristics of UK labour market divisions.

5. Conclusion

While there has been rapidly growing interest in the issue of divisions in labour markets, there have been relatively few empirical studies which explore how they are divided. At present, most studies assume that a certain type of division exists in the market, and apply this assumption to measure the extent to which this division can be observed. What is more, too much emphasis is placed on the role of atypical employment to measure this division. One of the reasons for this is the focus given to the German and other Continental European/corporatist country cases, without much investigation to see whether this definition of labour market division can be applied to other countries. In particular, the UK has not gained much attention on this matter compared to other European countries, although widening income inequality has been observed in the UK over the last two decades. Thus, in this chapter, I attempt to identify whether the UK labour market has been divided, and if so, how it has been divided using multi-group latent class modelling.

The dual pattern of division, often named as insiders/outsiders or the primary/secondary labour market, has been a general notion within the 'labour market divisions' context over the last few decades, although some literature has periodically tested a possibility of varied labour segments in labour markets (e.g. Blossfeld and Mayer, 1988, Jessoula et al., 2010). Rapidly developing recent literature on dualization has also drawn attention to the dual pattern of division, distinguishing divided groups by different employment contract statuses.

However, in this chapter the empirical results show that there is a clear presence of groups representing insiders and outsiders in the UK labour market. Particularly, the "insider" class has presented consistently in the analysis as showing substantial capacity over time. The group comprises those with secure employment - full-time and permanent contracts, and stable income over the low pay threshold. These workers are highly likely to be engaged in

professional/managerial employment and associated professional/managerial occupations. Furthermore, the majority of people in this group have access to occupational pensions through their work, indicating that those in this group would have a more favourable position during their retirement years as well as their working-age period. This indicates that the insiders not only have a stable position in the labour market but also have full access to welfare state entitlements, which is argued in the literature of dualization. Such characteristics are positively in line with the argument of most theoretical literature on the status of the insider.

Another prominent group, the outsiders, is highly likely to be in low pay and in either generally/vocationally skilled or low/unskilled occupations. The majority of outsiders are unlikely to have occupational pensions through their work. In terms of atypical employment, although workers in the "outsider" class have a relatively higher chance of being in involuntary part-time employment and non-permanent employment than people in the insider group, these features are not as distinctive as other distinguishable aspects, such as income level, occupational profile, or occupational pension coverage. From the model assessment statistics, the involuntary part-time variable does not particularly contribute to an explanation of the pattern and characteristics of the UK labour market divisions. This somewhat deviates from what has been theoretically argued by the dualization literature, in which the outsider group is often defined and described as being in a position of atypical employment.

What is more, a third group, called the "future insecure" class between the "insider" and "outsider" group, was also noted in the analysis. People in this group are less likely to be in low-paid and involuntary part-time employment but are more likely to be in temporary employment without occupational pension coverage, even lower than the "outsider" group. In other words, this group may have stability in their jobs and income for now, but this may not continue in future due to possible job instability from their employment contract, and a lack of income security through pensions. Such characteristics are also rather different from the existing arguments given that much of the labour market division literature argues that workers in non-permanent employment are more likely to be in the "outsider" group.

In terms of the distribution of labour segments and its variability, the pattern has remained relatively stable over the last 20 years within the three distinctive segments. The "insider" group

represents a substantial proportion - around 58-59 per cent of the total sample - while the "outsider" class accounts for between 12-18 per cent throughout the period. The "future insecure" group stands between 23 and 29 per cent of the total sample. The proportion of the three labour segments in the labour market is reasonably stable, and does not particularly show an increasing gap between the "insider" and "outsider". This does not correspond with the arguments posited in the majority of dualization literature. While the proportion of the "outsider" group increased slightly in 2010, it is hard to verify if this is directly related to the economic crisis of 2008 without further analysis.

In relation to the poor model fit with the five indicator variables, the results of the analysis distinguish the importance of examining the divisions in labour market at the individual country level. Unlike the pre-defined model which distinguishes the dividing pattern by different types of employment contracts, i.e., precarious versus secure workers or more directly atypical versus full-time permanent workers, the divisions in the UK labour market can be further explained by income levels, occupational statuses as well as access to occupational pensions. Hence, having precarious employment items, particularly involuntary part-time variables in the model, did not much help to improve the statistical model fit. However, this is not necessarily a new revelation. Previous studies have argued that there are cross-national differences in the characteristics of the outsider group, as well as who belongs to it, (Esping-Andersen, 1990, Davidsson and Naczyk, 2009, Häusermann and Schwander, 2012) and that dualization patterns can vary across countries, time and policy areas (Emmenegger et al., 2012). Nevertheless, this study is one of the first to provide concrete empirical evidence as to exactly how the divided groups can be characterised using individual level data across time. The results show that the nature of UK labour market division can be analysed rather differently from that of other continental European countries where the employment conditions and contract types play important roles to assess labour market divisions (Emmenegger et al., 2012, Schwander and Häusermann, 2013).

Therefore, the significant contribution of this chapter to the existing literature on dualization is that the UK labour market, in which dualization is deemed to be less likely to occur due to its liberal economic structure, has also been divided into several groups and presents a clear pattern divide between an "insider" and "outsider" group. However, what is most interesting is

that the divisions between the insiders and outsiders have not been purely characterised by their different employment contract statuses. In the UK, the main aspects that divide the workforce are different wage levels, occupational position and access to occupational welfare. What is more, the pattern of labour market division cannot be characterised by two clearly separate labour markets but by three groups in the UK. These three distinctive labour groups, namely the "insider", "outsider" and "future insecure" class, have been observed in the labour market from 1991 to 2010. All in all, the empirical analyses from the latent class modelling provide variable findings and evidence that enable us to understand the labour market divisions more accurately and more clearly.

Lastly, such findings presented in this chapter raise the prospect of further research. The first issue is that of mobility across labour segments. From the analyses shown above, it is clear that there are divisions in the labour market in a cross-sectional manner at one given point. However, it is not clear within the current analysis whether the workers have stayed in their respective groups or changed their membership frequently over the past two decades. Theoretical literature on labour market divisions has highlighted that the limited mobility between segmented groups perpetuates the persistent divisions in the labour market. Therefore, in the next chapter, I will address the issue of mobility between labour segments over the past two decades and investigate the (in)stability of division in the labour market in the UK.

Chapter VI. Does the divided labour force remain in the same group? The stability of the division in the UK labour market

1. Introduction

In the previous chapter, I find that the UK labour market has been divided and the pattern of this division can be represented by three distinctive groups. Furthermore, this division is relatively consistent over the last 20 years. In this sense, the results of latent class models provide helpful findings to gain a greater insight into the divisions in the UK labour market. While changes were observed in the volume of each group over time the proportion of each group has only changed slightly. Furthermore, the dividing pattern has remained relatively stable; the substantial proportion of the "insider" group, the relatively small but still stable segment of the "outsider" group and the third, "future insecure" group. However, such findings do not provide evidence of the positional stability of individuals at each labour segment over the last 20 years as latent class models only measure the patterns of labour market divisions in a cross-sectional manner. In other words, inter-mobility patterns between the divided labour groups are not yet clear in a longitudinal context. Even if the labour market is divided into different groups, this would not be a major problem as long as the mobility between the groups is great. However, if the positional stability of individuals at each labour segment is considerable, it confirms that the segmentation becomes deeper as the many authors on labour market division argue (e.g. Gordon et al., 1982, Goos and Manning, 2003, Emmenegger et al., 2012). Thus, the main point of interest in this chapter is to test the stability of each labour group through observing inter-mobility patterns between the three labour segment groups over the last 20 years.

The structure of this chapter is as follows. Firstly, in section two, I cite existing literature on the issue of mobility in the labour market and discuss the reasoning behind conducting an examination of the issue of mobility/stability between divided labour groups. Section three explains the data used in this chapter and the method to indicate the mobility patterns of individuals over time. Here, I briefly explain latent transition model processes and how this analysis measures the changes of individuals between different market segments over time. This is followed by a section that describes specific findings and results from the analysis. In

this section, I explain the extent to which people fall out of their labour segment and how they transition into different labour market statuses. The chapter ends with a summary of my findings and a conclusion in the final section.

2. Theoretical considerations of the stability/mobility issue in the labour market

Most literature on dual labour markets assumes that there is a confined mobility channel between labour segments due to the unequal distribution of labour market positions (e.g. Reich et al., 1973, Gordon et al., 1982). Due to a strong barrier that exists between the two different labour markets, people from the inside of the labour market are insulated within their positions and outsiders are less likely to move up to the insider market (Cappelli and Newmark, 2004). In relation to this, Doeringer and Piore (1971) also argue that internally oriented employment policies protect the "core" workforce since their skills and abilities are crucial to companies and difficult to replace. Hence, the "core" workforce is protected and insulated from outside forces such as cyclical economic changes or market vulnerabilities. Atkinson (1984) also attempts to explain the limited mobility between the labour segments through the core-periphery model. This model focuses on employers' labour utilization strategies that organisations often internalise part of their workforce if they are crucial to their success (the "core" workforce), while they externalise their remaining employees by means of transactional contracts (the "periphery" workforce). This provides employers with flexibility on their total amount of labour for occasions such as recessions and business downturns. In this way, job instability and insecurity are explicitly redistributed towards workers on the "periphery" while people in the "core" group are able to maintain their position. Consequently, mobility between these labour segments is limited, which generates persistent divisions in the labour market. Recent literature on dualization also argues that the widening pattern of dualised division between insiders and outsiders is in relation to curtailed mobility channels and the increased social inequality between the two labour segments (e.g. Emmenegger et al., 2012, Rueda, 2014).

There are also a number of empirical studies looking at mobility patterns between different employment statuses or pay levels. For example, many studies report transition patterns from unemployment to temporary jobs, and from temporary jobs to full-time permanent work with a prospect of temporary work as a 'stepping stone' for the unemployed (e.g. Booth et al., 2002,

Güell and Petrongolo, 2007, Graaf-Zijl et al., 2011). However, as discussed in the previous chapter, the proportion of temporary employment is relatively small in the UK and temporary employment contracts do not fully identify the characteristics of division in the UK labour market compared to other indicators (e.g. wages, occupation or occupational pension coverage). Therefore, such literature would only serve to provide a fragmented view in an analysis of the reasons behind labour market divisions in the UK. There has also been extensive research and evidence on the extent of low wages (Sloane and Theodossiou, 1996, 1998, Cappellari, 2002, Cappellari and Jenkins, 2004) and the limited chances of upward mobility for low-income strata in the UK, which has contributed greatly to the general rise of labour market divisions (Branden, 2009). For example, the transition probability from low to higher pay in the UK labour market has been noted to be lower than that of Germany (Pavlopoulos, 2013). Nevertheless, it is important to note that this argument mainly focuses on wage aspects without any other conditions, such as workers' employment contract statuses or occupational profiles.

Therefore, studies providing concrete empirical evidence of the strong positional stability of longitudinal division in the labour market are still lacking in spite of the discussion on the issue of limited mobility between labour segments. Much labour market division literature has approached the concept rather theoretically, that people in the inferior labour segment have limited access to their superior counterpart as they cannot overcome the barriers that exist between the labour segments. If not, researchers have demarcated the analysis by focusing on the transition from either (long-term) unemployment or atypical employment to full-time standard employment or wage levels.

Recently, Biegert (2014) analyses the status stability issue between the dualised labour force using quantified empirical data between the UK and Germany. He shows that possible mobility patterns from the "outsider" group (i.e. non-employment and atypical employment) to the "insider" group (i.e. permanent full-time employment) can be higher in the UK than Germany due to the different structure of labour market institutions. Considering that the UK has a flexible labour market structure and an unregulated liberal market economy, the barrier that exists between the "insider" and "outsider" groups in the UK is weaker than its German equivalent (Pavlopoulos et al., 2012, Biegert, 2014). However, this study does not inherently capture the exact pattern of labour market division at the individual country level as the author

pre-defines the pattern of division based on the definitions given by previous dualization theory. In other words, the author still conducts the analysis based on the pre-defined dichotomised pattern of division between the insider and outsider, comparing Germany with the UK to provide evidence that mobility patterns across these two institutional systems vary greatly. Yet, as stated in the previous chapter, the pattern and characteristics of division in the labour market can be varied at an individual country level. As a result, using the pre-defined concept may not provide accurate mobility patterns and   data concerning transition possibilities between labour segments across different countries over time.

Thus, this chapter examines the perception that there is limited mobility between labour market segments and measures the extent to which people in each labour segment stay in their groups over a defined period of time in the UK. More specifically, this chapter explores the inter-mobility patterns at the individual level between labour segments using the longitudinal data from 1991 to 2010. This is done by firstly examining the proportion of   workers who fall out of their dependent employment positions and change their labour market statuses to unemployed, economically inactive or self-employed across different time points and scales. Then, the mobility or stability patterns between the labour segments are explored among the individuals who remained in their labour market positions as employed.

The key findings from the analysis can be summarised clearly. The data shows that there has been a relatively strong stability in the divided groups over time although some transitions are observed especially when the transition pattern is measured in the longer-term scale. In particular, the stability of the "insider" group has been rather distinctive regardless of the transition patterns in evidence at different time points.

3. Selection of variables and transition analyses

3.1 Selection of variables and data

In order to look at the transition patterns of divided labour groups over time, the same data and variables for latent class models are used: the BHPS from 1991 and 2008 and the 'Understanding Society' data from 2010. The latent transition model builds on the LCA model

while incorporating a longitudinal component. Thus, the five sets of variables, atypical employment contracts including involuntary part-time and temporary employment, wage level, occupational profile and occupational pension coverage, used in the latent class analyses to capture the dividing patterns of the UK labour market, are again applied to explore the transition patterns across the divided labour groups between 1991 and 2010. As a longitudinal study, the sample consists of the original BHPS sample members who participated in the survey as dependent employees across Britain (since the Northern Irish data was added in 2001, the population from Northern Ireland is excluded in this study). The sample size of each latent transition model varies due to panel attrition and non-response as well as respondents' positional changes in economic activity status (i.e. to unemployed, economically inactive or self-employed). Thus, the positional changes out of dependent employment and tis extent will firstly be examined in the next section before undertaking the analysis of mobility patterns between the groups under analysis.

3.2 Analyses of transition out of dependent employment and the latent transition model

In order to examine the transition of individuals between different labour segments, a latent transition model is applied as a key tool of analysis. As mentioned in the methodology chapter, the latent transition analysis (LTA) is a type of autoregressive model which can describe changes in latent class membership in a longitudinal modelling context (Nylund, 2007). Hence, this approach facilitates the observation of transition patterns between different labour segments since the movement of individuals can be captured across specific time points. However, it is important to note that LTA only tracks the transition probabilities for those who have been employed for the period of measuring time. In other words, LTA does not provide a function for an additional group to be formed for people who transition out of employment between time periods. Thus, prior to the LTA, I assess the numbers of people who move out of dependent employment status and become unemployed, economically inactive or self-employed at each labour segment using a cross-tabulation analysis. Of various time scales, the yearly transition model is firstly applied for a short-term transition. Moreover, the transition probabilities with 3 and 5 year intervals at each time point are identified to capture the mid and long-term periods of transition. This will outline the numbers of people who leave their labour segments across the different time periods from the employed status and move to different

labour market positions. Furthermore, by measuring different time intervals the transition model will show which labour group tends to be most at risk of falling out of their positions. From this, the results will be expected to show the employment origins of those who fall into unemployment, economic inactivity or self-employment, and whether the different measuring time points and scales are closely related to the transition pattern of individuals.

Once the transition probabilities for changes in employment status are examined, the LTA is applied to measure the mobility patterns of individuals between the labour groups and to examine in groups who have not changed their dependent employment status across various time points. In terms of identifying the appropriate classes of latent variables in LTA, most studies employ LCA due to the fact that LTA is considered a longitudinal extension of LCA (Nylund, 2007, Collins and Lanza, 2010). In the previous chapter, I identified that the three-class solution is the most appropriate model to explore labour market divisions in the UK. Thus, such findings are used to determine the number and type of classes at all time points.

In order to examine transition patterns at different time points, the LTA model measures the likelihood of transitioning from a particular latent status at time 1 to another latent status at time 2. In other words, LTA models can detect transition possibilities at different time points. However, if the model includes more than three time points, it can be computationally too demanding and the process becomes very slow (Asparouhov and Muthén, 2014). Thus, this study explores the changes in latent status (i.e. the three different labour segments statuses) among dependent employees with a three-time point model. To measure the positional stabilities of individuals at each labour segment, the same time transition models from the cross-tabulation analysis are applied. I firstly look at the year to year mobility patterns of individuals in each labour segment to explore a short-term period transition (i.e. t, t+1, t+2). The 5-year gap at each time point is also examined between 1991 and 2010 in order to look at the numbers of people who move out of dependent employment in a long-term period interval.[7] Furthermore, the mobility patterns of individual employees in a 3-year gap are identified to capture the mid-term period of transition. Through an analysis of the short, mid and long-term

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[7] The model with 20 years' transition from 1991 and 2010 is not included in this study. This is partly due to the fact that the individuals with dependent employee status for 20 years are too small to be representative of UK dependent employees. Furthermore, such samples represent the only specific age groups involving those who have been in the labour market as dependent employees between1991 and 2010.

changes of the individual statuses between the three discrete labour groups, an examination of the mobility between the three segments of the UK labour market from 1991 to 2010 can be carried out.

Furthermore, in order to capture the time dependent relationships of the latent variables in the models with more than two time points, higher-order effects are applied in all of the LTA models in this analysis. As described in the methodology chapter (see chapter 4), it is largely recommended in the LTA that higher - order effects should be considered as they can provide more accurate patterns than first-order effects. The different levels of measurement invariance are also tested in the analysis in order to produce a meaningful comparison across the different time points. The results of the statistical test for the model fit suggest that the best model fit varies with different time intervals. Thus, the different levels of measurement invariance are applied in the final LTA results across time. By undertaking a log-likelihood ratio test to find the best model fit, the latent transition models with a 5-year time gap at each time point correspond with full measurement non-invariance models while partial measurement invariance models show the best model fit within the short and mid-term period transition models with 1-year and 3-year intervals.

4. Analysis results

4.1 Transition out of employment status

Using the latent class model, I identified that the patterns of the UK labour market divisions are represented by the three distinctive groups highlighted above from 1991 and 2010 and that these three discrete labour segments can be identified over the last 20 years without significant changes. Based on these findings, in this section I firstly examine the workers who moved out of their labour segments and changed labour market positions to become unemployed, economically inactive or self-employed, given that LTA only measures the positional mobility/stability of individuals among workers who remain as dependent employees for the period between time points.

For the short-term periods of transition between various time points, I have presented the results from 1991-1992-1993, 2000-2001-2002 and 2007-2008-2010. The period of 1991-1992-1993 represents the first three years where the data is available and the period in which the economic recession of the early 1990s was at its most prominent. The period of 2007-2008-2010 represents the last three years of available data and falls in the period of economic downturn due to the 2008 global financial crisis. These two time periods occur during large cyclical changes, and can therefore be crucial time points in an examination of mobility patterns and unemployment. In contrast, the period of 2000-2001-2002 represents a period of relative economic stability, and hence an upward mobility pattern would have been expected as a result. Furthermore, as discussed in chapter 3, several employment protection regulations have been expanded during this time period, such as increased protection for part-time and fixed-term employees and the period for complaints of unfair dismissal (reduced to 12 months) within the New Labour government's time in power. Thus, I also presented the transition patterns in 2000-2001-2002 to draw a comparison between the other two time periods. I then observe the transition patterns with 3-year intervals in order to capture the numbers of people who transition into other labour market statuses when the measurement time point becomes longer. The three different time periods (1991-1994-1997, 1998-2001-2004, and 2004-2007-2010) are included to measure observed transition patterns over the last 20 years. Since those three time periods cover relatively different points of the economic cycle in the UK, its impact on the different labour segments of individuals is also reflected. Lastly, the long-term period transition model is explored across the three labour segments with 5-year intervals. It provides a broad picture of dependent employees' labour market status trajectories and the proportion of people who remained in their employment position for ten years.

Through a cross-tabulation analysis, I first explore short-term period transition patterns. Tables 6.1, 6.2 and 6.3 show the numbers of dependent employees who fell out of dependent employment between the time points of 1991-1992-1993, 2000-2001-2002 and 2007-2008-2010 respectively. Overall, the people from the "insider" group are least likely to fall out of their positions and transition to other economic statuses, while the outsiders are generally at greater risk of falling into unemployment or economic inactivity than the other groups. In other words, people from the "insider" groups tend to be in more secure positions than other labour groups, while the outsiders are more at risk of falling outside the labour market across the

different time points in the analysis. The transition probabilities to the unemployed or economically inactive positions for the "future insecure" group fall somewhere between those for the insiders and outsiders. Such results again suggest that people from the "outsider" or "future insecure" groups are more exposed to market vulnerabilities while insiders tend to be more protected within their positions and less likely to leave the labour market, which is in line with the existing evidence on dualization theory (e.g. Emmenegger et al., 2012, Biegert, 2014). However, it is interesting to note that the mobility towards self-employed positions has been always higher in the "future insecure" group than in the other groups throughout the different time periods. This can be related to the characteristics of the "future insecure" class, with a higher number of temporary employment workers including fixed-term contract employees within the group. Furthermore, some people in this group might have moved their labour market positions to become (temporary) freelancers as self-employed. However, further research should be conducted to find out more information in this area.

By comparing the transition patterns between the tables, however, different patterns of changes are observed depending on the time period in question. By comparing the transition matrix in tables 6.1 and 6.3, more workers transitioned into other economic statuses during the periods 1991-1992 and 2008-2010 than in the other time periods (i.e. 1992-1993 and 2007-2008). This was observed across all three labour segments. For example, around 10 per cent of the insiders in 1991 left the labour market but such a proportion decreased significantly in the consequent year to almost 6 per cent. Concerning the outsiders, more than 18 per cent transitioned to unemployed or economically inactive in 1992, but this decreased to 11 per cent in 1993. A similar pattern is observed in Table 6.3. While 5 per cent of the insiders and 13 per cent of the outsiders in 2007 moved into unemployment or economic inactivity in the following years, more people from each labour segment transitioned into the same route in the period between 2008 and 2010 (i.e. more than 7 and 15 per cent of people from the "insider" and "outsider" groups). Considering that there was an economic recession in the early 1990s and the late 2000s, the economic downturn might have led to increased overall employment insecurity in these time periods.

Table 6.1 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 1991, 1992 and 1993 (%)

| | 1992 | | | | | 1993 | | | |
1991	Unemp.	Econ. inactive	Self-Emp.	Total	1992	Unemp.	Econ. inactive	Self-Emp.	Total
Insider	3.26	7.20	1.97	12.43	Insider	1.77	4.49	1.41	7.67
Future insecure	4.84	7.64	2.13	14.61	Future insecure	3.99	4.71	1.84	10.54
Outsider	4.06	14.28	2.63	20.97	Outsider	2.42	8.15	1.21	11.78

Table 6.2 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 2000, 2001 and 2002 (%)

| | 2001 | | | | | 2002 | | | |
2000	Unemp.	Econ. inactive	Self-Emp.	Total	2001	Unemp.	Econ. inactive	Self-Emp.	Total
Insider	1.08	3.60	1.72	6.95	Insider	1.19	3.15	1.23	5.57
Future insecure	2.20	5.91	2.53	9.95	Future insecure	1.67	4.27	2.71	8.65
Outsider	2.57	9.40	1.80	14.03	Outsider	2.37	8.38	1.82	12.57

Table 6.3 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 2007, 2008 and 2010 (%)

| | 2008 | | | | | 2010 | | | |
2007	Unemp.	Econ. inactive	Self-Emp.	Total	2008	Unemp.	Econ. inactive	Self-Emp.	Total
Insider	0.98	4.08	2.19	7.25	Insider	1.88	5.33	2.66	9.87
Future insecure	3.33	5.11	2.15	10.59	Future insecure	2.95	7.83	3.55	14.33
Outsider	3.56	9.55	0.97	14.08	Outsider	3.91	11.19	3.13	18.23

A further notable finding from table 6.1 in comparison to the other two tables (table 6.2 and 6.3) is that in the period of 1991 and 1992 people from the "future insecure" group are more exposed to unemployment (4.8 per cent in 1992 and 4.0 per cent in 1993) than those in the "outsider" class (4 per cent in 1992 and 2.4 per cent in 1993). This can be partly explained by the fact that the highest number of temporary workers out of the three groups can be found in the "future insecure" group. Combined with the impact of economic recession in the early

1990s, temporary employment workers might have been more exposed to a higher level of employment insecurity in this specific time period.

Furthermore, it is noticeable that the proportion of people who left the labour market across the labour segments during the early 2000s is relatively smaller than those of the early 1990s and late 2000s. In other words, people were more likely to stay in their employed positions in 2000-2001-2002, which can partly be due to the relative economic stability of the early 2000s in comparison   to the early 1990s and late 2000s. Such a strong pattern of stability is also observed by assessing the short-term scale of transition matrix across the time points between 1994 and 2006 although, in absolute terms, there are minor differences in the likelihood of actual transition probabilities at each time point (models can be provided upon request). As economic conditions from the mid 1990s to the mid 2000s were relatively stable compared to those of the early 1990s or the late 2000s, this might have contributed to a similar and strong positional stability pattern between 1994 and 2006.

I shall now examine the transition probabilities of individuals who changed their employed status to unemployed, economically inactive or self-employed within the 3-year time intervals specified. Tables 6.4, 6.5 and 6.6 show the positional stability/mobility patterns of each labour class when measuring the 20 year data set with the inclusion of the mid-term scale (i.e. 1991-1994-1997, 1998-2001-2004, 2004-2007-2010). Overall, the general transition patterns at 3-year intervals seem to be relatively similar to the short-term scale models. People from the "insider" group are the least likely to leave the labour market while outsiders are at greater risk of falling out of their employed status and moving outside the labour market. Such patterns are commonly observed across the different time periods under scrutiny. In other words, the positional stability of insiders is notably distinctive compared to other labour segments, especially in comparison to that of outsiders.

However, as the time interval between each time point becomes longer, the extent of workers who transition out of their employment status becomes larger across each labour segment. Such a transition pattern is observed across labour segments and different time periods. In particular, the likelihood of transitioning into an economically inactive position in absolute terms has increased significantly across each labour segment. This is partly due to the fact that a large

proportion of economically inactive people are retirees and longer-term analyses highlight the effects of transitions into retirement more effectively.

Furthermore, by comparing the results with different time periods, clear changes can be observed in the number of individuals who transitioned to a position of unemployment, economic inactivity or self-employment. From table 6.4, it is noticeable that in the period of 1991-1994, a larger number of people transitioned into unemployment or economic inactivity compared to the period of 1994-1997. For example, around 15 percent of people in the "insider" group between 1991 and 1994 transitioned into unemployment or economic inactivity but approximately 9 per cent of insiders transitioned into the outside of the labour market between 1994 and1997. Similar patterns are observed in the "future insecure" and "outsider" group. It is likely that employment stability in the early 1990s was affected by the economic recession which took place under John Major's Conservative government. However, as the economy recovered in the mid 1990s, transition patterns became less visible. Table 6.6 again shows that the numbers of people who transition into unemployment are significantly higher between 2007 and 2010 than between 2004 and 2007 across each labour segment, including the "insider" group. This confirms to some extent that when a severe economic crisis occurs, all workers including insiders are exposed to vulnerable market conditions and find themselves at greater risk of losing their jobs. From the late 1990s to the mid 2000s, when economic conditions were relatively stable and a period of economic growth ensued, there is a much lower rate of transition across labour segments, compared to the periods between 1991 and 1997 and between 2004 and 2010 (see table 6.5). In other words, a lower number of people left the labour market or changed their position to self-employed between 1998 and 2004. This implies that the overall level of employment stability can vary depending on the time points analysed, and that this can be closely associated with the country's economic well-being.

Table 6.4 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 1991, 1994 and 1997   (%)

| | 1994 | | | | | 1997 | | | |
1991	Unemp.	Econ. inactive	Self-Emp.	Total	1994	Unemp.	Econ. inactive	Self-Emp.	Total
Insider	3.22	11.82	2.70	17.74	Insider	1.70	7.66	2.58	11.94
Future insecure	4.24	11.94	3.71	19.89	Future insecure	1.83	9.40	2.81	14.04
Outsider	4.31	17.73	3.23	25.27	Outsider	2.81	15.50	2.84	21.15

Table 6.5 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 1998, 2001 and 2004   (%)

| | 2001 | | | | | 2004 | | | |
1998	Unemp.	Econ. inactive	Self-Emp.	Total	2001	Unemp.	Econ. inactive	Self-Emp.	Total
Insider	1.63	7.34	3.22	12.19	Insider	0.93	7.57	3.05	11.55
Future insecure	1.99	9.79	4.62	16.40	Future insecure	2.83	8.63	3.86	15.32
Outsider	2.92	15.14	1.62	19.68	Outsider	3.07	13.48	2.84	19.39

Table 6.6 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 2004, 2007 and 2010   (%)

| | 2007 | | | | | 2010 | | | |
2004	Unemp.	Econ. inactive	Self-Emp.	Total	2007	Unemp.	Econ. inactive	Self-Emp.	Total
Insider	0.95	7.50	3.84	12.29	Insider	2.20	6.98	3.18	12.36
Future insecure	2.39	9.65	4.58	16.52	Future insecure	3.38	10.88	4.13	18.39
Outsider	3.06	19.24	2.52	24.82	Outsider	3.82	17.17	2.29	23.28

Lastly, I explore dependent employees' transition probabilities to unemployment, economic inactivity or self-employment with a 5-year time gap at each transition point. Tables 6.7 and 6.8 show each labour segment's transition probabilities within the period of 1991-1995-2000 and 2000-2005-2010 respectively. The overall transition pattern of each labour segment is largely similar to the results from the previous models. As expected, the majority insiders are likely to retain their employment status while the outsiders are at greater risk of falling outside

the labour market. Furthermore, a relatively higher transition pattern towards unemployment is again observed across the labour segments, more so in the first half of 1990s and the latter half of the 2000s than during the other time periods under analysis (see table 6.7 and 6.8). This result again indicates that there is a close relationship between the country's economic conditions and the labour market transition probabilities of its workforce.

However, it is noticeable that larger numbers of people have transitioned into other labour market statuses as measuring the time period becomes longer at each time point. In particular, it is rather visible that a sizeable proportion of people became economically inactive. For example, approximately 25 per cent of people in the "insider" and "future insecure" group, and 40 per cent of outsiders in 1991 were declared economically inactive ten years later. A similar size of transition is also observed between 2000 and 2010. Retirement seems to play a prominent role in explaining such a noticeable shift. Considering that this study focuses on looking at an individual worker's labour market trajectory for last 20 years, one would expect to observe a larger extent of retirees from the economically inactive group when measuring the transition probabilities of dependent employees within a longer-term period. Indeed, this is one of reasons behind my decision not to conduct the analysis using a 20 year transition model (1991-2000-2010), as a rather substantial number of employees transitioned outside the labour market, particularly into a position of economic inactivity.

Table 6.7 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 1991, 1995 and 2000   (%)

1995					2000				
1991	Unemp.	Econ. inactive	Self-Emp.	Total	1995	Unemp.	Econ. inactive	Self-Emp.	Total
Insider	2.27	11.31	3.51	17.09	Insider	1.00	13.06	3.61	17.65
Future insecure	4.40	13.86	3.56	21.82	Future insecure	2.33	12.81	4.22	19.36
Outsider	3.79	18.18	3.66	25.63	Outsider	3.10	21.66	2.62	27.38

Table 6.8 Probability of transitioning to unemployed, economically inactive or self-employed from the three labour segments between the time points of 2000, 2005 and 2010   (%)

| | | 2005 | | | | | 2010 | | | |
2000	Unemp.	Econ. inactive	Self-Emp.	Total	2005	Unemp	Econ. inactive	Self-Emp.	Total
Insider	1.33	10.58	4.09	16.00	Insider	2.12	11.27	4.63	18.02
Future insecure	2.57	13.03	6.91	22.51	Future insecure	4.22	16.39	6.56	27.17
Outsider	3.29	20.03	2.99	26.31	Outsider	4.56	24.65	2.33	31.54

4.2 Latent transition analysis

While the cross-tabulation analyses are used to examine the transition patterns for individuals who moved outside the labour market or changed their dependent employed position to one of self-employment, the positional stability of individuals in each labour segment is measured through LTA models. Firstly, I examine short-term period inter-mobility patterns between the labour segments within the dependent working population. As stated in methodology chapter, I tested measurement invariance throughout the analyses in order to validate cross-group comparisons of latent variables at different time points. This is determined by assessing the various degrees of measurement models using log likelihood ratio test (detailed test results can be provided upon request).For short-term period transition the partial invariance LTA model with the same parameters for the "outsider" class produced the best fitting model. This means that the structure of the "outsider" class is the same across different time points while measurement parameters are freely estimated in the "insider" and "future insecure" groups across time.

Table 6.9, 6.10 and 6.11 show transition matrices among the three defined labour groups between the three time periods analysed: 1991-1992-1993, 2000-2001-2002, and 2007-2008-2010. The distinctive characteristics of the transition patterns are marked in bold. The estimated probabilities in the diagonals show that there is evidence of strong class stability across the labour segments when measuring year-to-year mobility patterns. The results indicate that the majority of employees (more than 70 per cent in each class) remain in the same assigned group

across the three consecutive time points.[8] Most notably, a very strong positional stability (more than 98 per cent probability) is commonly observed in the "insider" class with very little downward mobility across the different time periods. However, as stated in the previous section, each year approximately 7-12 per cent of people in the "insider" group transitioned out of their position of dependent employment. Therefore, while some members of the "insider" group may transition into positions of unemployment, economic inactivity or self-employment, very few move down to the "future insecure" or "outsider" class while they are in employment. Such findings lead to another intriguing observation that more frequent transition occurs between the "future insecure" and "outsider" classes. Across the three different transition matrices, on average 17-18 per cent of people in the "outsider" class moved into the "future insecure" class although this does vary depending on the time points. While the relative transition probability is lower, there are also around 4-5 per cent of people in the "future insecure" class who transitioned into the "outsider" group. The data therefore suggests that the barrier between the "outsider" and "future insecure" group is more porous than that which exists between the "insider" and the other two groups. In this context, it is important to note that the transition pattern from the "outsider" to the "future insecure" group will be considered as an example of upward mobility in this chapter. It is true that people from the "future insecure" class are exposed to market vulnerability along with the "outsiders" to a certain extent, especially with their relatively limited employment contract conditions or occupational pension access. However, they are not at risk of poverty while they work, given that their wage level is above the low wage threshold. Furthermore, wages are one of the important indicators in determining different characteristics of labour segments in the UK labour market as discussed in the previous chapter. Therefore, the transition pattern from the "outsider" to the "future insecure" class can still be regarded as an example of upward mobility.

There are further points which can be analysed by comparing positional stability/mobility between the three tables.   Firstly, the data shows that the upward mobility pattern from the "outsider" to the "future insecure" class is much smaller between 1991 and 1992 than between 1992 and 1993. For example, around 6 per cent of individuals in the "outsider" group in 1991

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[8] The transition probabilities between 2008 and 2010 are not considered here as it technically measures a 2-year time gap. This is due to the unavailability of 2009 data within the incorporating data process between BHPS and understanding society,

moved to the "future insecure" class in 1992, but this upward mobility pattern became far more visible between 1992 and 1993 (17 per cent transition probability). Furthermore, around 6 per cent of individuals in the "future insecure" group moved down to the "outsider" group between 1991 and 1992, while such a transition pattern was far less visible between 1992 and 1993. A similar pattern is again observed in table 6.11. Almost 10 per cent of people in the "future insecure" group moved down to the "outsider" group between 2008 and 2010, while a much smaller proportion of people (4 per cent) from the "future insecure" group transitioned between 2007 and 2008. Furthermore, as mentioned in the previous section, during these two time periods (i.e. 1991-1992-1993 and 2007-2008-2010) the number of people who transitioned into unemployment was also higher, especially those who were in the "future insecure" and "outsider" class. Given that the UK economy plunged into recession in the early 1990s and late 2000s, the data appears to highlight that financial crises increase the risk of employment instability and downward mobility in the labour market, particularly for people in the "future insecure" class. Nevertheless, the data also reveals that people in the "insider" group largely remain in a stable position despite the negative impact of economic recession. This can be partly explained by employers' labour utilization strategies as discussed in Atkinson's "Core-Periphery" model, which highlights that companies protect insiders from outside forces as they are the key components of the "core" workforce of a business or organisation. Thus, despite the large movements of other groups, the positional status of insiders is strongly protected, even during economic downturns.

It is also noticeable that the overall transition probabilities between the "future insecure" and "outsider" classes are higher between 2001 and 2003 in comparison to the transition probabilities within the other time periods selected. Approximately 18 per cent of people from the "outsider" group in 2000 transitioned into the "future insecure" group in 2001 and 2002. Additionally, people from the "future insecure" and "outsider" group successfully moved to the "insider" group between 2001 and 2002, although this does comprise a very small proportion of transition numbers[9]. Furthermore, as discussed, a lower number of people transitioned out of employment during these time periods. Thus, it can be considered that during a period of

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[9] As the overall proportion of the "outsider" class is relatively small compared to the other labour segments, the actual number of people who transition into the "insider" group from the 'outsider' class is very low compared to the total sample. For instance, it only makes up 1 per cent of the total sample, when around 8 and9 per cent of outsiders in 2000 and 2001 transitioned into the "insider" group in 2001 and 2002 respectively.

relative economic stability, the transition out of employment is less and the mobility pattern from the "outsider" to the "future insecure" group becomes more noticeable. However, very little mobility patterns are observed towards the "insider" class from the "future insecure" and "outsider" groups. This implies that there is a strong barrier between the insiders and the other groups, even during periods of economic stability and growth and it can drive the segmentation particularly between the "insider" group and the rest.

Across the time points between 1994 and 2006, the strong stability of the labour segments is observed, but subordinate transition possibilities between the "future insecure" and "outsider" classes are found, which reveal similarities with the transition patterns at the time points in 2000, 2001 and 2002 (detail information can be provided upon request). As stated previously, the economic conditions between the mid 1990s and the mid 2000s were relatively stable compared to the early 1990s or late 2000s. Hence, such conditions might have contributed to produce similar patterns of transition results between 1994 and 2006. The clear stability of the "insider" class is also presented throughout the different time points, with limited transition between the "insider" group and the other two, less secure groups.

Table 6.9 Estimated transition probabilities for the three labour groups between 1991 and 1993 (N=3281)

1991		1992			1992	(%)	1993		
		Insider	Future insecure	Outsider			Insider	Future insecure	Outsider
Insider	(54%)	**0.99**	0.00	0.01	Insider	(54%)	**0.99**	0.000	0.01
Future insecure	(32%)	0.00	**0.94**	0.06	Future insecure	(31%)	0.00	**0.98**	0.01
Outsider	(12%)	0.02	0.06	**0.93**	Outsider	(13%)	0.01	0.17	**0.82**

Table 6.10 Estimated transition probabilities for the three labour groups between 2001 and 2003   (N=3573)

2000		2001			2001	(%)	2002		
		Insider	Future insecure	Outsider			Insider	Future insecure	Outsider
Insider	(61%)	**0.99**	0.00	0.01	Insider	(62%)	**0.98**	0.00	0.01
Future insecure	(26%)	0.00	**0.94**	0.06	Future insecure	(27%)	0.05	**0.90**	0.05
Outsider	(13%)	0.09	0.18	**0.73**	Outsider	(11%)	0.08	0.18	**0.73**

Table 6.11 Estimated transition probabilities for the three labour groups between 2007, 2008 and 2010 (N=2520)

2007		2008			2008	(%)	2010		
		Insider	Future insecure	Outsider			Insider	Future insecure	Outsider
Insider	(61%)	**0.99**	0.00	0.00	Insider	(61%)	**0.99**	0.000	0.01
Future insecure	(29%)	0.00	**0.96**	0.04	Future insecure	(29%)	0.04	**0.87**	0.09
Outsider	(10%)	0.08	0.15	**0.77**	Outsider	(10%)	0.10	0.24	**0.66**

While the stability of each labour segment was evident within a short time frame, the relative sizes of the transition probabilities for a mid-term time frame appear larger than those   in a shorter time scale. Tables 6.12, 6.13 and 6.14 present the transition matrices between the labour segments using a mid-term time frame over the last 20 years. Overall, the transition probabilities for moving upwards from the "future insecure" and "outsider" class have visibly increased by applying longer time interval. In particular, the estimated possibilities of class transitions from the "outsider" to other groups have substantially increased. On average, 36-37 per cent of outsiders managed to move to the "future insecure" or "insider" class over the 3-year time gap across the different time points. This indicates that there are higher transition probabilities for upward mobility between the labour segments when measured with a longer time frame. However, it is important to distinguish at this juncture that the rates for outsiders to transition into the "future insecure" group were much higher than transition rates into the "insider" group. This again shows that the mobility patterns between the "future insecure" and "outsider" class are more evident than those involving the "insider" class. Furthermore, the high stability of the "insider" class is observed through the different time points (more than 95 per cent probability). This evidence implies that once people obtain an "insider" position, it is highly unlikely that they will transition into the other groups, and this is commonly observed in both the short-term as well as the mid-term time frame. Such findings again support the argument which focuses on limited mobility between the "insider" group and other segments due to the strong barrier that exists at the 'insider' class (Emmenegger et al., 2012, Häusermann and Schwander, 2012).

There are also a few different but interesting points observed at specific points. Firstly, it is

noticeable that the estimated probabilities of class transition from the "future insecure" and the "outsider" classes to the "insider" class are relatively larger in the period between 1994 and 1997, compared to the previous 3 years or later time points. In particular, the transition possibilities from the "future insecure" to the "insider" group are visible, as approximately 34 per cent of people in the "future insecure" class moved into the "insider" class between 1994 and 1997. This can be partly due to the stabilisation of the UK economy following the recession of the early 1990s. However, these periods also overlap with the Major government's unexpected expansion of several employee's rights acts and regulations due to the enforcement of the European Community on protecting employees' rights (Davies and Freedland, 1993). In other words, the deregulatory initiatives enshrined by the Thatcher government were put on hold to a certain extent during this period. For example, in 1993 unfair dismissal protection was expanded to employees who raise or pursue health and safety concerns in the workplace (1993 Trade Union Reform and Employment Rights Act) and in 1995 to those working in part-time employment (1995 employment Protection Regulations) (Davies and Freedland, 1993, Emmenegger, 2014). Furthermore, a minimum notice period for terminating employment contracts was introduced through the 1996 Employment Rights Act (Deakin and Gillian, 2009). This implies that the expansion of employment policies between 1993 and 1996 may have played a role in the sudden upward mobility from the "future insecure" to the "insider" group. This is especially true considering that there had been no such instances of sudden increase of employment protection throughout the 1980s and the early 1990s, when deregulatory employment initiatives were prevailing although the further research should verify its relationship.

Furthermore, between 1998 and 2004 more frequent upward mobility patterns are observed, particularly from the "outsider" to the "insider" group. For example, around 15 per cent of the outsiders transitioned into the "insider" group in both of the time periods in the analysis 1998-2001 and 2001-2004, while 7 and 13 per cent of the people from the "future insecure" group transitioned into the "insider" group during these time periods respectively. A similar pattern is also observed during the time points between 2004 and 2010. This may indicate mobility patterns of young people entering the labour market and eventually transitioning into the "insider" group after some time from the other groups. However, as discussed earlier, given that the proportion of the "outsider" group is much smaller than the other two labour segments,

the actual number of people who transitioned into the "insider" group is relatively small. For example, only 2.7 per cent of the total sample transitioned from the "outsider" to the "insider" group between 1998 and 2004, and 2.3 per cent of people moved from the "future insecure" to the "insider" segment. This finding again confirms that when transition occurs, it is more likely to occur between the "outsider" and "future insecure" groups rather than the "insider" and other groups. This implies that there is little clear evidence that the "future insecure" group acts as a stepping stone when an outsider moves up to the "insider" group given that limited transition is observed between the "future insecure" and the "insider" groups even when a longer time frame is applied to measure mobility patterns. The analyses show that with the exception of the period between 1994 and 1997, only a small proportion of people from the "future insecure" group managed to move into the "insider" group. This indicates that attaining an insider position is still difficult for people in the "future insecure" and "outsider" classes.

Table 6.12 Estimated transition probabilities for the three labour groups in 1991, 1994 and 1997 (N=2567)

1991		1994			1994	(%)	1997		
		Insider	Future insecure	Outsider			Insider	Future insecure	Outsider
Insider	(59%)	**0.97**	0.02	0.01	Insider	(57%)	**0.99**	0.00	0.01
Future insecure	(29%)	0.08	**0.92**	0.07	Future insecure	(31%)	0.34	**0.62**	0.04
Outsider	(12%)	0.05	0.30	**0.65**	Outsider	(11%)	0.14	0.20	**0.66**

Table 6.13 Estimated transition probabilities for the three labour group in 1998, 2001 and 2004 (N=2799)

1998		2001			2001	(%)	2004		
		Insider	Future insecure	Outsider			Insider	Future insecure	Outsider
Insider	(64%)	**0.97**	0.02	0.01	Insider	(65%)	**0.99**	0.00	0.01
Future insecure	(23%)	0.07	**0.87**	0.06	Future insecure	(25%)	0.13	**0.82**	0.05
Outsider	(13%)	0.15	0.26	**0.59**	Outsider	(10%)	0.15	0.18	**0.67**

Table 6.14 Estimated transition probabilities for the three labour groups in 1998, 2001 and 2004 (N=2153)

2004		2007 Insider	2007 Future insecure	2007 Outsider	2007	(%)	2010 Insider	2010 Future insecure	2010 Outsider
Insider	(68%)	**0.95**	0.03	0.02	Insider	(65%)	**0.99**	0.00	0.01
Future insecure	(24%)	0.00	**0.94**	0.06	Future insecure	(27%)	0.06	**0.87**	0.06
Outsider	(8%)	0.09	0.24	**0.67**	Outsider	(8%)	0.12	0.20	**0.68**

Tables 6.15 and 6.16 present the transition matrices among people in the labour market between 1991-1995-2000 and 2000-2005-2010, in order to explore the transition probabilities at each labour segment in a long - term frame. Firstly, as expected, the persistent stability of the "insider" class is depicted throughout both time periods. Less than 3 per cent of people in the "insider" class transitioned into the other labour segments at each time point. This again suggests that people who attain an "insider" position are more likely to remain in the same class regardless of the time points and time intervals. Such a finding then confirms the argument by labour market segmentation theorists that an insider's position is more protected from market vulnerabilities and outside forces and this makes their status more stable as a result.

However, the long-term transition analyses capture more frequent mobility patterns, particularly involving the "future insecure" and "outsider" classes. Between 1995 and 2000, more than 30 per cent of people in the "future insecure" class moved into the "insider" class. This can be again partly related to the expansion of employment protection policies that was set forth by the European Community. However, it is important to highlight that people in the "outsider" group were more likely to transition into the "future insecure" group than the "insider" group in the period of 1991-1995-2000. In other words, it is still more difficult to break through the barrier that exists at the 'insider' class. Nevertheless, upward mobility towards the "insider" class becomes more visible when examining the transition patterns from a longer-term perspective.

Different mobility patterns between the labour segments in the 2000s are also observed from table 6.14. While the higher transition possibilities between the "future insecure" and "outsider"

class are commonly presented, a substantially larger proportion of outsiders (39 per cent probability) managed to move unexpectedly into the "insider" class between 2000 and 2005. However, such a pattern decreased between the time points of 2005 and 2010. This can be in part due to the more stable economic climate in the UK between 2000 and 2005. In addition, considering that several employment regulations were implemented in the early 2000s under the New Labour government, such as unfair dismissal protection for all employees and protection for part-time and fixed-term workers (see chapter 3), the longer-term perspective model might have captured such changes. From this, it can be noted that the upward mobility channel between the divided labour groups does exist in the UK labour and it becomes more visible when a longer-term time frame is applied to track an individual's labour market status trajectories in periods of economic stability and growth. Nevertheless, the positional stability of the labour segments is still stronger than the likelihood of mobility across the time points, especially when considering the stability of the insiders.

Table 6.15. Estimated transition probabilities for the three labour groups in 1991, 1995 and 2010   (N=2182)

1991		1995			1995	(%)	2000		
		Insider	Future insecure	Outsider			Insider	Future insecure	Outsider
Insider	(61%)	**0.97**	0.02	0.01	Insider	(64%)	**0.98**	0.00	0.02
Future insecure	(25%)	0.09	**0.81**	0.09	Future insecure	(25%)	0.34	**0.61**	0.05
Outsider	(13%)	0.19	0.22	**0.59**	Outsider	(11%)	0.16	0.21	**0.63**

Table 6.16. Estimated transition probabilities for the three labour groups in 2000, 2005 and 2010   (N=1732)

2000		2005			2005	(%)	2010		
		Insider	Future insecure	Outsider			Insider	Future insecure	Outsider
Insider	(68%)	**0.97**	0.02	0.01	Insider	(73%)	**0.97**	0.00	0.03
Future insecure	(21%)	0.16	**0.75**	0.09	Future insecure	(19%)	0.05	**0.85**	0.10
Outsider	(11%)	0.39	0.28	**0.54**	Outsider	(8%)	0.11	0.32	**0.57**

5. Discussion and Conclusion

This chapter addresses the question of positional stability at each labour segment over the last 20 years to explain the key tenets of labour market segmentation in the UK. Much theoretical literature, including dual labour market and labour market segmentation theory, as well as dualization theory, commonly states that the limited mobility between labour segments exacerbates the increase in the dual pattern of division in the labour market. However, the issue here is not the existence of the "outsider" group in the labour market but rather the inability of outsiders to move towards the "insider" market in their working lives (Doeringer and Piore, 1971). While the results from the previous chapter show that the UK labour market seems to be divided into three distinctive groups, the "insider", "future insecure" and "outsider" groups between 1991 and 2010, such findings did not provide a full picture of individual positional stability/mobility issues given that limited mobility has been a key point in explaining a divided labour market. Furthermore, there has been little empirical research which examines the longitudinal positional stability of individuals in a divided labour market. Thus, this chapter particularly focuses on exploring the mobility patterns between the three distinctive labour segments using longitudinal data from 1991 to 2010. Here, I applied a new way of observing transition patterns among the divided labour groups over a long period of time, namely the LTA approach. Nevertheless, latent transition models are only able to examine the mobility patterns of individuals with dependent employee status throughout each measuring time point. Hence, I also examined the numbers of people who left their employment position or became self-employed through a cross-tabulation approach.

Through the use of cross-tabulation analyses, it is observed that people in the "outsider" class are generally more exposed to unemployment and economic inactivity than the other groups throughout the time periods, whereas the "insider" class is more likely to remain in the same position regardless of time points. However, severe recession and economic crisis do seem to influence the positional stability of insiders to a certain extent. The risk of being outside the labour market for the people in the "future insecure" group falls between that of the "insiders" and "outsiders". Nonetheless, at the beginning of the 1990s, a relatively large number of people in the "future insecure" class transitioned into unemployment, even higher than the total of outsiders transitioning into unemployment. Such a finding suggests that people in the "future

insecure" and "outsider" groups have a relatively higher level of employment instability than the "insiders". However, the degree of transition probabilities tends to change depending on the measuring time points and time scales, given that the probabilities of transition have been varied over the last 20 years. Looking at the longer-term perspective, transition probabilities towards the outside of the labour market become substantially larger, especially with regard to the economically inactive position.

Furthermore, the positional stability of individuals at each segment is largely consistent over time, although there are some minor changes depending on time points and time scales. Such results provide clear evidence that the labour market in the UK tends to be segmented into the three distinctive groups over the last 20 years, with limited chances of mobility between the labour segments. What is more, it is important to note that the stability of the "insider" class is particularly strong regardless of the time points and time frames. More than 95 per cent of people who are categorised in the "insider" class remain in the same class at a later point after an examination of both short and longer-term perspectives. This suggests that "insider" experience at an earlier time point has a strong and lasting impact on an employee's labour market pathway. Furthermore, such results confirm the theoretical argument of dual labour market theory, that the people in the "insider" group are protected against economic and temporal insecurity and thus they are less likely to move into other groups.

When the transition occurs patterns are more frequently observed between the "future insecure" and the "outsider" groups. In particular, the upward mobility pattern from the "outsider" group to the "future insecure" class is more commonly observed compared to the mobility pattern towards the "insider" class from either the "future insecure" or "outsider" classes. This underlines that it is easier to change labour market segment positions between the "future insecure" and "outsider" group than to transition into the "insider" segment. This supports the claim of dual labour market theorists that there is a strict barrier around the "insider" class, preventing people who begin their careers outside the "insider" market to enter it over their life course (Doeringer and Piore, 1971, Reich et al., 1973).

Nevertheless, albeit a small proportion, upward mobility into the "insider" market is observed, especially looking at transition patterns over a long-term period (5 years at each transition). In

particular, such a pattern is more frequently observed during periods of economic stability (i.e. 1995-2005). Such a finding may corroborate the existing evidence. Biegert (2014) argues that obtaining an insider position as an outsider is relatively visible in the UK labour market. He argues that 60 per cent of "outsiders" transitions into the insider market after 5 years. However, it is important to distinguish here that such a result is rather different from the results I have found through latent class and latent transition models. The empirical evidence from the LTA models shows that the transition probability into the "insider" market can be estimated at 55 per cent when economic conditions were stable, specifically between 2000 and 2005, but this changes by observing measuring time points outside periods of economic stability from 16 to 55 per cent. One of the reasons that Biergert's estimation was much higher than the results of LTA is that the unemployed population is included in Biegert's model, whereas the LTA models only measure transition probabilities in the working population. However, this could also be due to the different definitions of "insider" and "outsider" groups that are applied in the analyses. While Biegert's model followed dualization theory's definition of "insiders" and "outsiders", focusing solely on the different employment contract types a worker can hold, the LCA models are derived from the distinctive patterns of divisions in the UK labour market, which are more explained with an individual worker's wage, occupation class and occupational pension access. Furthermore, through the results of the LTA, I found that the "insider" group remained stable over time regardless of outside forces such as fluctuating economic conditions or employment regulation policies. Thus, this chapter does not just present empirical evidence of the mobility patterns from "outsiders" to "insiders" by reflecting the distinctive characteristics of each labour groups based on the UK labour market, but it also measures the extent to which the "insiders" are protected and insulated from market vulnerabilities. This is often discussed by scholars from dual labour market and labour market segmentation theory as a key tenant of labour market segmentation.

To summarise, the results of the analysis show that the UK labour market, which has a flexible labour market structure with a liberal market economic system, tends to also have confined mobility change between labour segments. This does not reflect the assertion from existing literatures on the subject that deregulated liberal labour markets such as the UK would have higher inter-mobility patterns between "insiders" and "outsiders". While transitions between the "future insecure" and the "outsider" groups are more frequently observed by assessing

transitions over a longer-term period, a strong stability pattern is generally observed in both the short and mid-term frame. In particular, UK employees in the "insider" class are highly likely to remain in the same class regardless of time points and time scales. Furthermore, the empirical evidence above shows that transition probabilities into the "insider" group are much less likely than originally believed, and that in fact there is   less chance of transitioning into the "insider" group for most workers. This, therefore, highlights the advantages of using LCA and LTA models for measuring labour market divisions. However, it is yet difficult to accurately pinpoint the driving force behind strong positional stability at each labour segment, especially the "insider" segment. It is also empirically questionable that who is most likely to be included in the "insider" group. Therefore, such issues raise an interesting question for further research which will be analysed in the next chapter.

Chapter VII. The barrier to access: What determines the stability of divisions in the labour market?

1. Introduction

The previous chapters have examined whether the UK labour market is divided and to what extent these labour segments are stable over time when the dividing pattern is established. The results have underlined that the labour market in the UK has been divided into three distinctive labour segments over the last 20 years and that this division has largely remained stable. Although mobility patterns are found for the "outsider" and "future insecure" groups, it is usually between these two groups, while transition into an insider position has been rather limited. Such findings lead to further questions at this juncture: which demographic is represented in each labour segment, and what are the main determinants that divide the labour market over time?

There have been many studies that provide general and descriptive evidence of divisions in labour market, with details of the individual characteristics of each labour segment. It is often argued that women, younger and older individuals and those with lower educational attainment are more likely to find themselves in a precarious position in the labour market (Taylor-Gooby, 1991, Esping-Andersen, 1993, see for an overview Davidsson and Naczyk, 2009, Chung and van Oorschot, 2010, Chung et al., 2012). Union membership is also highlighted regularly as a crucial factor in determining the characteristics of a divided labour market. The insider/outsider theory views trade union membership as one of the core driving factors which reinforces this division, focusing on trade unions' distinctive strategies to protect their members, which are largely shaped by 'membership rules' (Blanchard and Summers, 1987, Lindbeck and Snower, 1987).

However, recent literature on dualization focuses on the composition of labour market segments, arguing that their characteristics can be varied across welfare regimes and countries. For example, Häusermann and Schwander (2012) argue that dualization in the post-industrial labour market differs. In liberalised free market economies such as those of the UK and US, the divisions in the labour market are more biased towards skill/education levels than in

Continental European countries, which are more distinguished by gender differences. In the Nordic countries, segmentation is not as widely recognised as in other European countries but the insider/outsider divide is observed in gender studies (Häusermann and Schwander, 2012). Biegert (2014) also argues that socio-demographic characteristics such as gender, age and education are crucial factors in an analysis of the stability of the insider/outsider divide both in Germany and the UK, although the likelihood of transition into an insider position is higher in the UK than in Germany. Furthermore, Palier and Thelen (2012) highlight that the role of unions can drive divisions in the labour market, specifically in continental European countries associated with relatively strong unions within their respective market economies.

However, in the previous chapter I found that the pattern and features of divisions in the UK labour market are relatively different from previous studies. Occupational classes and income statuses capture the different characteristics of labour segments more clearly. Hence, it will be worthwhile to test which social-demographic groups are more likely to be included in these labour groups. Although age, education and gender have often been highlighted as key individual level factors which distinguish the different composition of labour market divisions across countries or welfare regimes, it is not yet clear if such variables can explain the different features of labour segmentation in the UK labour market. Furthermore, a number of analysts argue that corporatism and the power of unions have largely caused the division in the labour market in corporatist European countries (Palier and Thelen, 2010, Palier and Thelen, 2012), while in countries with a liberal economic model, such factors are assumed to be less significant dividing causes (Häusermann and Schwander, 2012), especially with the decline of union power in the 1980s in the UK (see chapter 3). Thus, the ongoing impact of union membership on the division of the UK labour market will be also measured.

In this chapter, therefore, I examine which socio-demographic groups are most likely to be in each labour segment, evaluating the different individual level characteristics with the results derived from the previous chapter. Given that the UK labour market is divided into the three distinctive labour groups and the positional stability of the "insider" group has been particularly strong over the last 20 years, one can expect that the individual characteristics of the "insider" group differ from the other groups. Based on the findings of the LCA models, I examine which factors have made a significant impact on the division of the UK labour market. In terms of

selecting the variables that affect the divisions of the labour market, I will reflect the key theoretical and empirical literature. However, it is worth noting here that the main focus of the analysis is placed on the impact of gender, age, and education as well as trade union membership. A multi-nominal logistic regression model is used to estimate the compositional features of each labour segment and to find out the indicative predictor(s) in explaining the nature of the divided labour market in the UK. In addition, considering the longstanding stability of the "insider" group, I assess how the individual characteristics in the "insider" group differ from the other groups through the use of a multi-nominal logistic regression model.

This chapter is structured as follows. Firstly, in the next section I will examine a series of influential readings concerning the issue of heterogeneity in each labour segment and potential factors which help to explain this division in the UK labour market. Also, the operationalisation of the individual level variables is included in this section. Secondly, in section three, I briefly explain the concept of multi-nominal logistic regression models, the variables included in the analyses and their interpretation in the models to be used in this chapter. In section four, the results of the analysis are presented and section five provides conclusions and implications.

2. Theoretical and empirical background for determining labour market divisions

This section reviews different strands of literature on labour market divisions and assesses how the existing literature has elaborated on the different features of labour segments. A key focus in this section is to examine which variables have been assessed to highlight the socio-demographic differences in each labour segment. I also look into the studies that have empirically examined the features of the labour market segments in the UK, to identify how these studies define and operationalise the main determinants of labour market divisions.

2.1 Impact of individual level characteristics on labour market divisions

There are several individual-level characteristics that can be taken into account when examining the determinants of divided labour market segments. Here, I specifically look into eight individual level variables that have been suggested as potential factors which affect labour market divisions.

Gender

Gender is a demographic indicator that has various implications in the post-industrial labour market. According to Esping-Andersen (1999), labour markets in Western democracies are strongly gendered. This can partly be due to the weaker labour market position of women. Much literature points out that women's labour market participation has been often disrupted or become more adjusted to flexible working arrangements as women reconcile care and other family responsibilities with their work, for example, through part-time work or jobs with flexible working hours (Reilly, 2001, Tomlinson, 2006, Emmenegger, 2010). However, employment conditions or wage levels in non-standard employment are generally less favourable than in full-time jobs (Edwards, 2006, Kalleberg, 2009, Standing, 2011). Thus, theoretical and empirical literature on labour market divisions argues that women are more likely to find themselves in precarious positions in labour markets (Lindbeck and Snower, 2001, Häusermann and Schwander, 2012, Schwander and Häusermann, 2013, Biegert, 2014). In particular, dualization theory highlights gendered labour market segmentation in Continental European countries as being linked to the correlative role of institutions in creating a gender imbalance (e.g. Emmenegger, 2010, Emmenegger et al., 2012, Häusermann and Schwander, 2012). For example, the participation rate in the labour market for women in Continental European countries has been much lower than in Scandinavian countries or the UK, in relation to a lack of childcare services and/or low financial incentives to take up full-time work (Garcia'Moran, 2010, Häusermann and Schwander, 2012). Moreover, people in flexible employment are not treated equally within their employment protection system compared to full-time workers (Keller and Seifert, 2012). This indicates that gender division has been more typically represented through an analysis of different employment contract status in Continental European countries (Davidsson and Naczyk, 2009). Walby and Olsen (2002) also argue for the presence of a gender-specific division in the low-end service market in the UK. Walby and Olsen state that a sizeable low-end service labour market has rapidly developed over recent decades with the advance of de-industrialisation and there has been a pronounced concentration of women in low-paid employment. However, lower service sector jobs tend to become more exposed to labour market vulnerabilities in relation with their low pay level and poor working conditions. This implies that the features of gender division in the UK differ from those in Continental European countries, which are represented more clearly through different

occupations. Thus, in this paper, I assume that gender can be one of the crucial factors to explain the contrasting demographics in different labour market segments.

Age

Age is another individual characteristic that has been used on a regular basis to indicate the differences between labour market segments along with one's human capital level. Human capital is a collection of resources which can be attained from education and training or skills accumulated from work. Therefore, the effect of age on labour market divisions is often noted with respect to one's human capital level (Becker, 1964, Taylor and Walker, 1994, Biegert, 2014). This implies that young workers and new labour market entrants are more likely to be exposed to labour market risks than older workers due to their relatively lower levels of work experience or skills. Esping-Andersen (1999) also argues that despite differences between welfare regimes, there are usually different occupational prospects for young and older workers. In other words, younger workers are more likely to be in unstable positions in the labour market compared to older workers, due to their comparatively low level of human capital. Nevertheless, in terms of career advancement, the younger age group seems to be in a better position. Bukodi and Róbert (2007) point out that younger workers have much better chances of upward mobility than older workers across many European countries. Such findings are also confirmed by Biegert's (2014) recent empirical analysis which underlines that people in the older age group (aged between 55 and 64) are less likely to become a "insider" from an "outsider" position, both in Germany and the UK. Furthermore, old age may not always provide employment security. Erlinghagen (2008) argues that older workers may face a higher level of employment insecurity than younger workers due to their low re-employability. From this, one can expect that the prime working age groups are more likely to be in the "insider" group than in the younger or older age groups. Hence, I argue that age can be a relevant indicator to explain the different characteristics of each labour segment and the hierarchical nature of workers' employment changes.

Education and skill

It is widely known that highly educated workers generally find themselves in a more stable and

secure position in the labour market. Human capital theory highlights that people with higher educational and/or skill levels are less likely to be exposed to labour market vulnerabilities and are more likely to experience upward mobility in the labour market (Becker, 1964). Human capital theory also suggests that the contribution of human capital is closely associated with increasing the "productivity" of an individual. Thus, the discrepancy of human capital is often represented by different levels of earning and/or employment stability in the labour market (Becker, 1962, Mincer, 1970). This relationship has become more distinctive within recent decades after socio-economic structural changes, in the labour market (Iversen and Wren, 1998, Deakin and Reed, 2000). With the expansion of the service sector, a number of jobs have increased in the low-skilled or high-skilled service sector; however, the middle-skilled service sector has not seen the same rates of job expansion (Goos and Manning, 2003, Emmenegger et al., 2012). Such a trend has been observed more readily in countries where the service sector acts as a dominant industry, such as in the UK or US (Wright and Dwyer, 2003, Holmes, 2010). Consequently, workers with higher levels of education and qualifications enjoy their high skilled labour positions in the labour market and have more chances of upward mobility, while those with lower education and lacking skills are at greater risk of facing labour market vulnerabilities with their low-paying service jobs and limited chances of upward mobility (Becker, 1964, OECD, 2015). This reflects companies' labour utilisation strategies in terms of the valuation of individual workers, with regard to their human skills and level of education. Hence, education will be used as one of the main indicators to account for demographic differences between the labour segments in the UK.

Trade Unions

Certain studies including the insider-outsider theory highlight that trade unions can be a crucial factor to distinguish the different features between "insiders" and "outsiders", since the "insiders" tend to be more unionised than the "outsiders" in companies (Blanchard and Summers, 1987. They also highlight that the unions generally act as an interest group with conditions for membership and, in return for support and protection for union members (Blanchard and Summers, 1987). However, Varieties of Capitalism (VoC) theory argues that the power of trade unions can be more distinctive in coordinated market economies as firms commonly engage in strategic interactions with the unions, compared to liberal market

economies where they are comparatively weaker due to more competitive market arrangements (Hall and Soskice, 2001). In addition, in the UK case, the power and influence of trade unions and their membership numbers have significantly decreased since the Thatcher government with their deregulatory labour market procedures (Deakin and Reed, 2000). Recent literature by Schwander and Häusermann (2013) also underlines that union membership does not provide significant advantages in income and upward mobility in many European countries. This implies that union membership may no longer serve as a crucial factor in an analysis of "insiders" and "outsiders" division in the UK labour market. Nevertheless, Chung and van Oorschot (2011) argue that trade union membership increases subjective employment security for workers   (see also Chung and Mau, 2014 for a review) which provides evidence   that unions still offer protection from labour market risks for their members in the UK labour market. This implies that, the impact of unions on segmentation in the UK labour market can be   a source of debate and hence I shall analyse this further in this chapter.

Previous unemployment experience

It is often highlighted that earlier carrier interruptions, such as unemployment experience, can impact on an individual's labour market position, according to early literature on insider/outsider theory (1986, Lindbeck and Snower, 1988). It is largely reflected from the process of de-accumulation of human capital during periods of unemployment that previous unemployment experience can heighten job insecurity and can deteriorate one's human capital. Heckman and Borjas (1980) also claim that an individual with unemployment experience is more likely to face greater difficulty in re-finding a full-time/permanent position of employment. Moreover, Böckerman (2004) argues that previous unemployment experience can be an indicator which shows the unobservable low productivity of individuals and low human capital. Chung and van Oorschot (2010) also ascertain that previous unemployment experience has a longstanding impact on employers' perceptions of potential employees and their employment insecurity. In addition, the empirical study by Muffles and Luijkx (2008) show that unemployment history reduces the odds of upward mobility by analysing its impact in several European countries. The results of these studies underline that unemployment experience can have a negative impact on upward mobility between labour segments. From such outcomes, I expect that unemployment experience can affect the segmentation in the UK

labour market.

Health conditions

Health conditions have been also noted as a significant feature in terms of one's human capital, (Becker, 2007) since health can be closely related to one's labour market participation. Those facing poor health conditions may not actively engage in labour market activities and their career history may be disrupted as a result. Consequently, human capital may diminish and impair the ability to re-enter the labour market. Erlinghagen (2008) also conducts an empirical study which highlights the negative effects of poor health on employment security. Thus, I aim to test the relations between poor health and labour market divisions.

Migrant status

Despite efforts to prevent discrimination against migrant workers in the labour market, including anti-discriminatory regulations, a number of immigrants remain more vulnerable to labour market volatility than native populations, facing a language barrier and limited opportunities for political and civil rights involvement (Emmenegger and Careja, 2012). In accordance with this argument, King and Rueda (2008) highlight that a number of workers in the cheap labour pool are immigrants and such a pattern is commonly observed in many European countries, despite deepening European integration. Even taking educational attainment into account, a recent OECD report (2008) states that immigrant workers are still far more likely to earn less than native-born workers in the same job. Furthermore, Chung and van Oorschot (2011) found that migrant workers feel more insecure in their employment than native citizens of the 22 European countries in the analysis. Thus, I include this variable in the model and examine the impact of migration on the divided labour market in the UK.

Family structure

Family structure and marital status may affect an individual's labour market position, due to the complexities of balancing responsibility at work and at home. There are indications that marital status does influence labour market participation, particularly for women (Grzywacz

and Marks, 2000). Furthermore, having children is associated with impacting negatively on women's full-time labour market participation, largely due to work-family conflicts (Plantenga and Remery, 2005). Thus, I include these features to evaluate potential heterogeneity within the working population and to measure the relationship between family structure and the divided labour market in the UK.

2.2 Impact of company-level characteristics on labour market divisions

Company-level characteristics have also been recognised as structural variables to explain divisions in labour markets in existing literature. Among them, I specifically look into two variables at this juncture: public companies and company size.

Public sector employment

It is often argued that public companies provide more stable working conditions and employment security than private companies, as they are less likely to be affected by business cycles. A recent OECD report (2014) shows that public sector jobs are better safeguarded than private sector jobs in many OECD countries. Clark and Postel-Vinay (2009) and Chung and van Oorschot (2010) also conducted an empirical study in 12 European countries which confirms this assertion. In the UK, more than 60 per cent of employees in the public sector are covered by collective bargaining, compared to only 16 per cent in the private sector (Department for Business Innovation & Skills, 2012). This can be correlated with a higher rate of union membership in the public sector than in private companies (Ibid). In other words, people who work in the public sector are more likely to be protected in their jobs than those in the private sector. This implies that the different working contexts between public and private sector companies may reinforce the segmentation of the labour market.

Firm size

Early literature on labour market segmentation theory, argues that workers in larger firms stand a better chance of benefitting from good working conditions and better wages than those working in smaller firms (Doeringer and Piore, 1971). This ties in closely with the concept of

dual labour market theory: people considered crucial to companies and difficult to replace are positioned in core sectors of firms where they can generally enjoy better working conditions and higher wage levels (Piore, 1975, Cappelli and Newmark, 2004). Highly structured and hierarchical job arrangements in large corporations also provide ample opportunities for upward mobility, through the internal labour market system (Reich et al., 1973). By contrast, their counterparts in smaller firms in the peripheral sector experience comparatively unstable and insecure labour market positions. Most notably, smaller firms are less able to withstand in periods of economic crisis or market changes, rendering their workers more vulnerable to job losses (Chung and van Oorschot, 2010). Dex and Scheibl (2001) further argue that the majority of big companies have formalised arrangements of occupational fringe benefits for their employees, such as occupational pensions, as a part of a larger corporate strategy which small and medium size companies struggle to compete with. Based on this, I assume that workers in larger companies are more likely to be "insiders" in the labour market.

3. Logistic regression analysis and variable construction

3.1 Logistic regression analysis

In this chapter, I use a logistic regression analysis model to identify the different socio-demographics which comprise the labour segments, to find out which variable makes the strongest impact on the divided labour market. Given that the UK labour market has been divided into three distinctive labour groups over the last 20 years, which have remained stable during that time, a multi-nominal logistic model is applied to estimate the different characteristics between the three labour groups. The analysis is conducted for each year and provides evidence of which indicator(s) are most likely to affect the divisions in the UK labour market. At this juncture, I can also evaluate the key driving factors that constitute the strong positional stability of the "insider" group by comparing the different labour groups' socio-demographics. In order to assess the effect of individual and company level factors, particularly the likelihood of being an "insider", the "outsider" group is specified as a reference group. The results are presented as relative risk ratios. As discussed in chapter 4, , the interpretation of coefficients is not straightforward in logistic regression models. Hence, relative risk ratio is often used in multi-nominal regression models to estimate the relative risk of specified

categories compared to the reference group (Hilbe, 2009). Coefficients above 1 indicate an increase in relative chance and those between 0 and 1 show a declined relative ratio.

3.2 Variables construction

Dependent variables

In order to examine the major determinants on UK labour market divisions, I use the LCA outcomes from the previous chapter (chapter 5) to derive the dependent variable. Based on the LCA results, I categorise employees into three categories; "insider", "future insecure" and "outsider", and the "outsider" group is specified as the baseline. I exclude retirees in this analysis, or those who are 65 years of age and above in accordance with the retirement in the UK. This leaves us with 4000 cases on average between 1991 and 2010.

Independent variables

After reflecting on a number of potential indicators to signify the differences between labour segments in the existing literature, I include a set of explanatory variables with individual and company level factors to examine who are more likely to form in three labour groups. However, as previously stated, the main focus for this analysis is placed on gender, age, education and trade union membership while the impact of other variables are still under the consideration. Gender is dummy coded whereas age is grouped into ten-year intervals (16-25, 26-35, 36-45, 46-55 and 56-65 years) to observe generational differences. Education level is categorised into four different groups: Low school level or below, vocation or high school level, diploma and degree, advocated by Lambert (2009). This education classification is one of the conventional and convenient ways to incorporate various education categories, derived from BHPS into statistical analysis, which serves to reduce the correlation with age and to place the focus on educational attainment. Union membership is dummy coded between people with and without union membership and highlighting the influence of the unions on labour market divisions. Other variables have also been included to assess the relationships with the three different labour segments. These are: previous experience of unemployment, health conditions, migrant status and family structure for individual level features and public vs private sector employment

and firm sizes for company level characteristics. In terms of measuring previous unemployment experience, I categorise the respondents into those who have faced unemployment over the past year and those who have not. The degree of health status is measured with three categories:poor, fair and good health. The migration results are dummy coded to distinguish between nationals and non-nationals, depending on their place of birth. The impact of family structure on the labour market is considered using two different variables: marital status and having dependent child(ren). Both variables are dummy coded, separating the respondents with a legal partner or child(ren) against those who do not. The public sector employment category is dummy coded as public companies versus others. Firm size is categorised into three groups: micro firms (1-9 employees), small firms (10-49 employees) and medium/large firms (above 50 employees).

4. Analysis

4.1. Descriptive analysis

In order to provide an overview of the independent variables used in this chapter, a descriptive analysis is firstly applied. Tables 7.1 and 7.2 show the distribution of respondents to twelve independent variables and their subsequent correlation matrix. I have included 1991 and 2010 as the first and last time points of the data set. By comparing the distribution of each variable between 1991 and 2010, the changes of individual and company-level characteristics over the last 20 years are recorded. In terms of dependent employees' age distribution, younger workers' labour market participation has decreased in relative terms to their older counterparts (see table 7.1). Educational attainment level in the UK has also significantly improved, to the extent that by 2010 more than 50 per cent of British dependent employees had a diploma or university degree. However, union membership decreased between 1990 and 2010. Such changes reflect the socio-demographic and structural changes in the UK labour market that much literature has demonstrated. With the expansion of tertiary education, the overall education level of employees has improved while the deregulated labour market policies in the 1980s and 1990s impacted on the power and size of the unions. However, the table 7.1 shows that the distribution of public sector employment and size of firms has been more or less similar over time.

In terms of the correlation matrix between the variables, table 7.2 shows that many variables are statistically correlated to each other while the strength of the relationship is relatively weak. The relationship between age and marital status, as well as the association of marital status and having child(ren), are relatively strong. This can be closely linked to an individual's age and family formation time. Moreover, union membership has shown relatively strong relationship with public sector employment and this relationship has strengthened over time. This in a way reflects a distinctive feature of the UK labour market, in which the union membership rate has traditionally been much higher in the public sector than in the private sector. This also implies that trade unions in public sector have played a far more influential role than those in private sector. In addition, the results show that union membership and firm size are statistically correlated to each other. In other words, those who work in bigger companies are more likely to be members of a union than their counterparts in smaller firms. The education variable also significantly correlates with most independent variables included in the model, with the exception of one category; the experience of unemployment. This largely serves to reinforce the argument of human capital theory that socio-demographic characteristics such as age, gender educational backgrounds are closely associated with each other and that they can significantly impact one's labour market path (Becker, 1962). Furthermore, this evidence points towards educational attainment as a crucial factor on one's labour market position and on the divisions in the labour market, considering its strong relationship with the other independent variables in the analysis.

The overall results of the descriptive analysis show that the relationships and distribution of the variables corroborate the existing arguments of theoretical and empirical literature. Hence, one can assume that the selected independent variables will serve as relevant indicators in an evaluation of the major determinants of the divisions in the UK labour market. Moreover, the results indicate that the strength of the correlation between any two variables is under 0.5, and that therefore one cannot make a linear prediction of any other variables by viewing the results of the correlation matrix. remaining variables.

Table 7.1. Statistics of independent variables,1991 and 2010

Variable	1991	2010
Individual characteristics		
Gender		
Male	49.6	47.6
Female	50.4	52.4
Age		
16-25	19.1	12.6
26-35	27.8	21.9
36-45	26.0	27.9
46-55	18.7	24.7
56-65	8.4	12.9
Education		
Low education or below	26.9	9.7
Vocation or high school	42.7	30.6
Diploma	20.1	36.82
Degree	10.4	22.87
Union membership		
Non-member	63.9	68.9
Member	36.1	31.1
Health status		
Poor	4.2	10.9
Fair	14.4	29.96
Good health	81.4	59.09
Immigration status		
Foreign born	6.1	3.8
Native born	93.9	96.2
Marital status		
Not Married	37.1	43.6
Married	62.9	56.4
Having Child(ren)		
Yes	65.0	62.6
No	35.0	37.4
Company level characteristics		
Public sector employment		
Yes	30.4	31.0
No (Non public)	69.6	69.0
Firm size		
1-9	19.7	17.7
10-49	28.8	30.2
Above 50	51.5	52.1

Table 7.2 Correlation matrix between the independent variables

Variable	Year	Male	Age	Education	Union membership	Non-Unemp Experience	Health condition	Immigrant status	Marital status	Not having child(ren)	Public companies	Firm size
Male	1991	1										
	2010	1										
Age	1991	0.007	1									
	2010	0.012	1									
Education	1991	**-0.052***	**-0.106***	1								
	2010	**-0.035***	**-0.041***	1								
Union membership	1991	**0.087***	**0.103***	**0.071***	1							
	2010	**-0.072**	**0.164***	**0.127***	1							
Non-unemployment experience	1991	-0.027	**0116***	-0.013	**0.097***	1						
	2010	**-0.040***	**0.111***	-0.002	**0.094***	1						
Health condition	1991	**0.044***	-0.019	**0.079***	0.011	0.011	1					
	2010	**0.028***	**-0.149***	**0.124***	-0.002	0.021	1					
Immigrant status	1991	0.003	-0.019	**-0.074***	0.010	-0.004	0.014	1				
	2010	**0.026**	**-0.077***	**-0.051***	-0.008	**0.045***	0.025	1				
Marital status	1991	0.02	**0.442***	**-0.031***	**0.095***	**0.104***	0.002	0.028	1			
	2010	**0.04***	**0.44***	**0.038***	**0.095***	**0.086***	**-0.035***	**-0.059***	1			
Not having child(ren)	1991	-0.003	**0.053***	**-0.03***	**-0.033***	**-0.053***	0.001	**0.028***	**-0.391***	1		
	2010	0.017	**0.099***	**-0.066***	**-0.009**	**-0.028***	**-0.052***	**-0.04***	**-0.279***	1		
Public sector employment	1991	**-0.158***	**0.138***	**0.212***	**0.357***	**0.048***	0.016	-0.009	**0.066***	-0.023	1	
	2010	**-0.215***	**0.135***	**0.168***	**0.443***	**0.076***	0.012	-0.014	**0.115***	**-0.049***	1	
Firm size	1991	**0.141***	0.007	**0.116***	**0.303***	**0.06***	0.019	**-0.03***	0.001	**0.007***	**0.102***	1
	2010	**0.046***	**0.034***	**0.142***	**0.245***	**0.024**	**0.029***	0.009	-0.004	**-0.010**	**0.178***	1

4.2. Multivariate results

In this section, the results of the multi-nominal logistic regression analyses are presented to examine the ways in which the socio-demographics of the labour segments in the UK differ, and which social groups are most likely to be found in the different segments. As mentioned, the results are presented in relative risk ratios. Thus, the coefficients indicated in the models show the different relative ratio of categorisation into the "future insecure" or "insider" groups, impacted by various individual and company level characteristics, in contrast to the "outsider" group. I have chosen to present the results from 1991, 1995, 2000, 2005 and 2010 with 5-year gaps in between each. 1991 and 2010 are the first and last time points, both of which produced atypical results. This is not surprising given the recessions which took place at the beginning of the 1990s and the late 2000s. The time points of 1995, 2000, and 2005 reflect a period of relative economic stability between the two recessions. Thus, the results also can shed light on the effects of economic cycles on divided labour markets.

The results from 1991, 1995, 2000, 2005 and 2010 are presented in table 7.3. Overall, it seems that many of the independent variables did have a significant impact on the divisions in the UK labour market throughout the 1990s and 2000s, although the relative risk ratios have shown variations for each variable at each time point. In particular, the key independent variables, gender, age, education and union membership distinguish the contrasting demographics within the labour segments clearly. Most notably, the role of education appears to be highly significant, given that those with a degree are much more likely to be in the "insider" group throughout the period of time specified. Gender and union membership also appear to have significant effects on the divisions in the labour market in the UK while the effect sizes tend to decline over time. Thus, the results are consistent with the broader argument on divided labour markets which claim that human and social capital factors such as gender, age, education and union influence can exacerbate dualization in the labour market. In terms of analysing the effects of each variable over time, in gender terms, there is a clear advantage for men in the UK labour market compared to women. Table 7.3 indicates that compared to women, men in 1991 were 3.6 times more likely to be in the "future insecure" group and 7.4 times more likely to be in the "insider" group given other variables in the model are held constant. In 1995, male workers still had a far greater chance of being in either the "future insecure" or "insider" groups than female

workers. However, it is important to note that the impact of gender tends to decrease in the 2000s, although gender differences still help to explain the divisions of the labour market at a statistically significant level from 1991 to 2010. However, there is an indication that gender segregation within the labour segments has decreased. The increase in women's labour market participation and increasing women's productivity as well as more equal wages reflect the larger numbers of women in the "insider" group.

The analysis also demonstrates that age is a key demographic factor in terms of differentiating between the three labour segments in the UK. Controlling for all covariates, people between 26-35, 36-45 and 46-55 years of age in 1991 were more likely to be in the "future insecure" group than younger workers (16-25 year-olds). Also, people in these prime working age groups (workers between 26 and 55 years of age) were at least three times more likely to be in the "insider" class. Similar results are also observed at the other time points in the analysis that the prime age workers (26-55 year-olds) are more likely to be in the either "future insecure" or "insider" group than youth workers (16-25 year-olds). The older workers (55-65year-olds) were more likely to be "insiders" than younger workers. However, the relative chances for older workers to occupy favourable positions in the labour market are lower than for those from prime working age groups in most time cohorts.[10] Such results reinforce the arguments stipulated in the existing literature (e.g. Biegert, 2014). However, the results from 2010 indicate that older workers are over 8 times more likely to be in the "insider" group than young age workers and their coefficient becomes much higher than   that of prime age workers. Such a change may be closely linked to the recession of the late 2000s. There are also other factors to consider, namely the older worker having secured their "insider" positions with the aid of superior human capital and work experience, or the difficulty young people face to enter the job market during the economic recession which began in 2008.

However, the education variable produced the most noteworthy result in the analysis. When the model controls for other covariates, people with higher education qualifications are much more likely to be in stable and secure labour market positions. Specifically, an individual with a university degree has a far greater likelihood of entering and remaining in the "insider" group.

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[10] Similar results are observed throughout the years in the analysis until 2010.

For example, in 1991 people with a vocation or high school qualifications were more than 1.8 times more likely to be in the "future insecure" group than those with a lower level of educational attainment. What is more, those with the vocation or high school qualification have 3.4 times higher to be in "insider" employment position than people with the lower level of education. However, a highly educated individual with a degree was 17 times more likely to be in the "insider" group than to those with a lower level of educational attainment. A similar pattern, but with even more sizeable disparities, is observed at the later time points in the analysis with regards to educational attainment. People with a university degree or more were 25 times more likely to be part of the "insider" class than those with lower educational attainment in 1995, 2000 and 2005. This clearly indicates that those with a higher level of educational attainment have a far greater chance of entering the "insider" group. The most astonishing results are, however, observed in 2010, as the significance of educational attainment has further amplified in the divisions of the UK labour market. The results show that people with a diploma or degree are up to 6 and 50 times more likely to be in the "future insecure" and "insider" group respectively, than those with a lower level of educational attainment.[11] Considering the decimation of the UK economy caused by the financial crisis of 2008 and subsequently on the labour market, it stands to reason that with lessening job opportunities, educational attainment may have become a more important factor, particularly regarding entrance into the "insider" class at that time. Such results indicate that the possibility of entering the "insider" class is highly dependent on a high level of education. Those with high educational attainment are also more likely to be in the "future insecure" group than the "outsider" group but the sizes of effect are not as big as those in the "insider" group. These results then confirm that the argument of human capital theory that individuals with high educational attainment are more likely to find a more stable and secure position in the labour market due to their higher human capital levels. It is also consistent with the argument set forth by dualization scholars (e.g. Häusermann and Schwander, 2012) that UK labour market segmentation is strongly biased against those with low educational attainment.

Union membership also seems to highlight the demographic differences of labour market segmentation, especially between the "insider" group and the other two groups. The results

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[11] This data is from the 2010 time point; in 2008, the likelihood of being in the 'insider' class for people with a qualification in higher education was 25 times higher.

show that workers with union membership are highly likely to be in the "insider" class. For example, people with union membership were over 3.6 times more likely to be in the "insider" group than those without union membership, both in 1991 and 1995, when controlling all covariates. In the 2000s, while the impact size was relatively lower, people with union membership were still more than twice as likely to be in the "insider" group as those without union membership. Nevertheless, union membership does not clearly capture the contrasting natures of the "future insecure" and "outsider" groups. Although people with union membership were relatively 1.3 times more likely to be in the "future insecure" group in 1991, such an impact became largely insignificant from 1995 onwards. This can be linked to various reasons including the 2008 financial crisis and the de-unionisation movement of the 1980s and 1990s as well as the subsequent decline of union power in the UK. However, it is important to highlight that trade union membership seemingly still remains a crucial factor, especially in an explanation of the differences between the "insiders" and "outsiders", although much literature assumes that the impact of unions would be relatively limited in an evaluation to explore the different characteristics of a divided labour market in the UK (for example, Schwander and Häusermann, 2013).

The other variables also tend to have a significant relationship with the divided labour market in the UK. For instance, the analysis shows that the two company-level variables are relevant indicators to explain the different nature of labour market segmentation in the UK. Throughout the period of time in the analysis, people who work in the public sector are more likely to be in the "insider" group than those who work in private companies. Furthermore, table 7.3 shows that there seems to be a growing relationship between a public sector job and an "insider" position. In 1991, people working in the public sector were 1.8 times more likely to be "insiders" compared to those working in the private sector. This disparity increased in the 2000s, as public sector workers were more than twice as likely to occupy an "insider" position. Furthermore, a bigger size of effect is observed in 2010 when other covariates are held in constant. This implies that those who work in the public sector are more likely to be assigned into the "insider" class than people who work in the other sectors. Nevertheless, the nature of public sector employment does not seem to distinguish the different nature within the "future insecure" and "outsider" groups.

Firm size also appears to have a significant effect on the divided labour market. The data reveals that people working in companies with more than 50 employees in 1991 and 1995 were over 7 times more likely to be in the "insider" group than those who work in micro or medium size companies. Moreover, people who work in larger firms tend to fall in the "future insecure" group compared to the "outsider" group at the early two time points (1991 and 1995), although their relative risk ratios are relatively smaller than those for the "insider" group. However, it should be noted that a steadily weakening relationship between the size of firms and entrance into the "insider" group is observed in the 2000s. The possibility for an individual working in a large firm to be in the "insider" group decreased. Furthermore, the use of firm size to distinguish the feature of the "future insecure" group compared to that of the "outsider" group had become rather ineffective by the 2000s. One can therefore argue that people working in larger firms were more likely to be in advantaged positions in the labour market throughout the 1990s and 2000s, although the relationship between the "insider" group and firm size has somewhat weakened.

Unemployment experience also highlights the different nature of the "insiders" and "outsiders". Table 7.3 indicates that those without unemployment experience are far more likely to be in the "insider" group, with the exception of the year 2010. People without unemployment experience are over 3 times more likely to be in the "insider" class in 1991, 1995, 2000, and 2005 compared to people with unemployment experience. Although the full results of the regression analysis between 1991 and 2010 at each time point are not represented in this chapter due to a lack of space (results can be provided upon request), there are similar trends observed from 1991 to 2008. However, the severity of the financial crisis in the late 2000s seemingly affected this relationship significantly. The disparity between those with unemployment experience and those without no longer caused the primary fissure between the labour segments by 2010. Considering that the unemployment rate soared up by 8 per cent during the recession in the late 2000s (OECD, 2013), this feature has become significantly less relevant in this context. In terms of examining the differing nature of the "outsider" and "future insecure" groups, unemployment experience aspect did not seem to explain their distinctive characteristics effectively. Such a result can be partially related to the characteristics of the "future insecure" group, in that this class comprises a higher number of temporary employment workers than other groups. Therefore, unemployment experience does not accurately explain

the differences between the "outsider" and "future insecure" groups.

Yet, it is important to note at this juncture that the two company level variables (public vs private sector employment and firm sizes) and the disparity of unemployment experience does not fully capture the different nature of the divided labour markets in the UK as clearly as other socio-demographic factors, such as gender, age and education. While the socio-demographics of the "future insecure" group do contrast with those of the "outsiders", company level variables did not show the significant differences between them. Such results again confirm that socio-economic variables are vital in terms of distinguishing the characteristics of each labour segment.

The impact of health conditions, family characteristics and immigration background appear marginal when compared to the other variables. At each time point, these variables are often shown to be insignificant to the dependent variable; in other words, they do not capture the different nature of each labour segment adequately. Even when significant effects are observed in some categories, their impact size is rather small or limited compared to other independent variables. However, the results from these three variables are of more interest in 2010, when the effects of immigration status and good health conditions became more visible. Table 7.3 shows that in 2010 people who were born in the UK are over four times more likely to be "insiders" than those who were born in foreign countries. In addition, people with good health are also more likely to be in preferable labour market positions than those with bad health conditions. Considering that such changes were observed in 2010 but not at the other time points, this appears to be a close correlation with the recent financial crisis.

What is more, the results show that large coefficients are particularly observed in the "insider" group, compared to those in the "future insecure" group. This implies that the gap between the "insider" group and the "outsider" group is substantial. Furthermore, the effects of key independent variables on the "insider" group are mostly within significant levels, while some variables, such as public sector employment or union membership, do not accurately explain the differences between the "future insecure" and "outsider" groups. Such results suggest that people in the "future insecure" group relatively share similar characteristics with the "outsiders", compared to people from the "insider" class. This can also help to explain the more frequent mobility patterns between the "future insecure" and "outsider" groups. However, the

features of the "insider" do differ from the other groups, and such trends are observed throughout the last 20 years. This underlines that the selected independent variables explain the scale of the divide between the "insiders" and the other groups.

In summary, this section provides detailed empirical evidence of the different nature of the three labour market segments, and how the "future insecure" and "insider" groups are relatively different from the "outsider" group. Of the independent variables within the models, several socio-demographic areas such as gender, age and education have revealed the distinctive nature of the labour segments in the UK between 1991 and 2010. In particular, the relationship between a high level of educational attainment and the likelihood of being the "insider" group is particularly eye-catching. Moreover, this relationship had become significantly more pronounced by 2010. It can be argued that education is one of the most influential indicators in an analysis of the different features of the three UK labour segments. Gender has also proved to be an accurate predictor in identifying a key dividing line of labour market segmentation. However, established gender segregation has been weakening over time. Another interesting finding from the analysis is that the trade union membership in the UK is still closely associated with finding an insider position.

In addition, large coefficients are generally observed in the "insider" group compared to the "future insecure" group. This implies that the gap between the "insider" group and the "outsider" group is substantial. Furthermore, the effects of key independent variables on the "insider" group are mostly within significant levels, while other variables, such as public vs private sector employment or unemployment experience, do not accurately explain the differences between the "future insecure" and "outsider" groups. Such results suggest that people in the "future insecure" group relatively share similar characteristics with the "outsiders", compared to people in the "insider" class. This would help to explain the frequent mobility patterns between the "future insecure" and "outsider" groups, explained in chapter 6. However, the individual characteristics of the "insider" group greatly differ from the other two groups, which was presented at each time point from 1991 to 2010. This shows that the selected independent variables highlight the scale of the gap between the "insiders" and the other two groups reinforces the socio-economic divide between.

Table 7.3 Determinants of labour market divisions: Differences in the relative risks between the "future insecure and "insider" group in contrast to the "outsider" group from 1991,1995, 2000, 2005 and 2010 data

Ref. 'Outsider '	1991		1995		2000		2005		2010	
	'Future insecure'	'Insider'	'Future insecure'	'Insider'	'Future insecure'	'Insider'	'Future insecure'	'Insider'	'Future insecure'	'Insider'
Individual level characteristics										
Gender *(ref. female)*										
Male	3.63***	7.37***	3.5***	5.61***	3.35***	5.12***	2.73***	3.54***	1.89**	2.71***
Age*(ref. 16-25)*										
26-35	1.98***	4.26***	2.45***	4.53***	2.75***	6.37***	2.77***	6.21***	2.66*	7.86***
36-45	1.91***	4.87***	2.57***	5.46***	2.02***	7.12***	1.6*	5.6***	1.55	5.22***
46-55	1.46*	4.47***	1.57*	3.66***	2.67***	7.58***	1.69*	5.3***	0.99	5.06***
56-65	1.32	2.96***	1.73*	3.34***	2.49***	3.89***	1.37	2.84***	2.9*	8.16***
Education *(ref. low school or below)*										
Vocation or high school	1.8***	3.35***	2.0***	3.8***	2.05***	3.67***	2.16***	3.9***	1.66	3.82***
Diploma	3.55***	9.73***	2.91***	7.84***	3.16***	5.72***	2.81***	5.53***	2.58**	7.18***
Degree	3.62***	17.73***	5.3***	26.21***	8.03***	31.49***	6.6***	25.31***	6.07***	49.58***
Unemployment experience *(ref. unemp spell)*										
No unemployment spell	1.39	3.26***	0.83	3.37***	1.7*	3.53***	1.61	3.54**	0.47	0.81
Health status*(ref. poor)*										
Fair	1.13	1.61	1.11	0.72	1.34	1.17	1.48	1.31	1.92	1.6
Good health	0.86	1.22	1.32	0.92	1.31	1.33	1.72*	1.84*	3.15***	3.5***
Immigrant status*(ref. foreign born)*										
Native-born	1.00	1.5	0.79	0.85	0.83	0.8	1.39	1.43	1.85	4.18*
Marital status*(ref. not married)*										
Married	1.22	1.34*	1.06	1.29	0.78	1.23	1.19	1.36*	1.31	1.51*
No child(ren) *(ref. having child(ren))*	1.2	1.39*	1.18	1.3	0.73*	1.02	1.28	1.38*	0.97	1.09

Ref. 'Outsider '	1991		1995		2000		2005		2010	
	'Future insecure'	'Insider'	'Future insecure'	'Insider'	'Future insecure'	'Insider'	'Future insecure'	'Insider'	'Future insecure'	'Insider'
Company level characteristics										
Public companies *(ref. non public companies)*	1.06	1.83***	1.09	2.19***	0.94	2.44***	0.78	2.33***	0.9	3.42***
Firm size*(ref. 1-9)*										
10-49	2.1***	3.22***	1.62**	2.52***	1.28	2.03***	1.25	2.12***	1.09	2.6***
Above50	2.43***	7.43***	2.65***	8.51***	1.71***	5.5***	1.59**	5.49***	1.32	5.0***
Union membership *(ref. non union member)*										
Union member	1.3*	3.63***	1.35	4.21***	1.04	3.2***	1.36	3.33***	0.84	2.05**
Model summary										
Max log likelihood	-3430.74		-3000.35		-2988.23		-2618.17		2262.04	
Pseudo R^2	0.216		0.223		0.206		0.201		0.217	
Number of cases	4474		4089		4183		3680		2105	

Note: ***p<0.001, **p<0.01 ,p<0.05, Relative risk ratios from multi-nominal logistic regression on divided labour market segments, Pseudo R^2 is McFadden's R^2
Further information of p-value and 95 per cent confidence internal is presented in the table 1 in Appendix .

5. Discussion and conclusion

In this chapter, I explore how the UK labour market is divided into the three labour segments by examining individual and company level characteristics and investigate the extent to which these indicators can explain the distinctive pattern of divisions in the UK labour market. Dividing patterns in the UK labour market have deviated in some aspects from the assertions of the existing literature (see chapter 5). I therefore sought to examine the key predictors that have been discussed by other scholars can actually distinguish the feature of the labour segments in the UK and whether they are applicable to this study. By reviewing the early literature on labour market division, including dual labour market theory and insider/outsider theory as well as the most recent literature, dualization theory, I selected the most commonly highlighted indicators to explain the divisions in the UK labour market. Thus, using the outcome of the LCA from chapter 5 as the dependent variable, I explored common features of those within these three labour segments and analysed what variable can be the major determinant to explain the labour market divisions in the UK. At this juncture, I used multi-nominal regression models to focus on the relationship between the three labour segments and employed key independent variables to determine the distinctive patterns of labour market divisions in the UK.

The results showed that many independent variables do help to explain the distinctive patterns of divided labour segmentation in the UK labour market. The different individual characteristics of the "insider", 'future insecure' and "outsider" groups are observed throughout the last 20 years. The analysis shows that of the various independent variables, the key independent variable - i.e., gender, age, education and union membership - are the crucial indicators to explain the divisions in the UK labour market. Most notably, the impact of education on the divisions in the UK labour market is substantial throughout the measured time period between 1991 and 2010, despite the rapid expansion of tertiary-level education. Individuals with a degree have a much higher chance of being in the "insider" labour market than those with a lower level of educational attainment. Such results show that the segmentation of the UK labour market is strongly biased in favour of those with a high level of educational attainment. It is also important to note that from the variables used, the three socio-demographic variables - namely gender, age and education - have underlined the different demographics of the three divided labour market segments between 1991 and 2010. This is

largely consistent with existing evidence that gender, age and education contribute to the divisions in the labour market (Häusermann and Schwander, 2012, Biegert, 2014). Company-level features and unemployment experience have also had a visible impact on the segmentation of the UK labour market, as theoretical literature, including insider/outsider theory and dual labour market theory, has stipulated. However, these variables do not help to distinguish different nature of the "future insecure" and "outsider" groups effectively, although they do reveal a clear understanding of the distinctive features of the "insider" group compared to the other groups. This is partly due to the fact that those in the "future insecure" group share similar individual characteristics with the "outsider" group. In other words, the individual features of the "insider" group differ markedly from the other two groups. Such results imply that there is a bigger gap between the "insiders" and the rest, which goes some way to explaining the longstanding stability of the "insider" group.

By comparing the results at the time points used between 1991 and 2010, it is also noticed that the effect sizes of some of the independent variables tend to change depending on the time points. The impact of gender and union membership has decreased over time, although the effect of both variables is statistically significant throughout the time in the analysis. This can be explained by women's increasing labour market participation and the decline of union power in the UK. This is broadly consistent with the arguments made in existing literature regarding the changes of UK labour market structure made since the 1980s. Furthermore, the severity of the financial crisis in the late 2000s has also affected the composition of each labour segment. It has been observed that the effect sizes of unemployment experience, education and immigration status changed notably in 2010. Unemployment experience became largely irrelevant, while educational attainment became even more vital than the other factors in 2010. Immigration status also became a more visible indicator in 2010, a shift from the previous time points in which it played a more marginal role. Given the severe economic crisis of the late 2000s, it is likely that such an unstable economic situation has helped to bring about such changes.

However, the clearest deviation from the existing literature revolves around educational attainment. The overall result is in line with the existing evidence that education is one of the most influential individual variables to explain the different nature of divided labour groups.

However, the likelihood that individuals with a degree to be in the "insider" group is far greater than the existing evidence. This highlights the role of education in the divisions of the UK labour market and underlines the advantages of measuring the correct patterns and characteristics of labour market divisions at an individual country level. Furthermore, it confirms the argument put forward by the VoC literature which states that general and transferable skills are vital in liberal market economies such as the UK, where national economies are underpinned by a deregulated markets as hiring and firing is relatively easier than other European countries (Hall and Soskice, 2001). In addition, these results are generally consistent with the well-established argument of human capital theory (e.g. Becker, 1962;1964) that the investment in education attribute an individual's labour market position.

Secondly, union membership still provides a significant impact on the divisions in the UK labour market. It is often claimed that trade unions in continental European countries have an influential impact on the division in the labour markets, linked to their relationship with the state and employers based on coordinated economies (Eichhorst and Marx, 2012, Palier and Thelen, 2012). However, trade unions in liberal labour markets are considered to have a more limited influence and are often expected to have a minimal impact as a result. Yet, there is a higher relative chance for an individual with union membership to be in the "insider" class. This result is obtained by controlling for all other covariates including the impact of public sector employment where the union membership rate is much higher than in the private sector companies. In other words, union members in the UK labour market are more likely to be in better positions than non-union members, although this disparity decreased slightly over the period of time between 1991 and 2010. This finding indicates that there is still space for unions to wield influence, even in liberal labour markets such as the UK.

Lastly, the result highlights that the composition of each labour market segment and its features can change over time. By measuring the relationship between the independent variables and the labour segments, the effects of demographic indicators such as gender have shifted since the 1980s, in accordance with socio-demographic and structural changes. The result also indicates that economic and financial crises can alter the feature of each labour segment. Accordingly, it is feasible to assume that the divisions in the labour market are closely linked to transitions in socio-economic structure and national economic cycles.

Chapter VIII. Conclusion

1. Introduction

There has been a great deal of interest on the issue of divided labour markets over recent decades. Especially, with a rise of atypical, precarious and low-paid jobs as well as an increase in income inequality, a number of literatures have provided a relatively detailed account of how such changes have a close relationship with the development of labour market divisions (e.g. OECD, 2011, Emmenegger et al., 2012). Despite this attention, few studies have systematically examined the labour market divisions in a way that allows for an exploration of country-specific patterns and features of divisions as well as matters concerning the positional stability of individuals within the labour market segments by considering different labour market institutions and policies between countries. At present, most studies assume that a certain type of division exists in labour markets and apply the assumption without much investigation whether this definition can be applied across different countries' labour markets. For example, most recent empirical studies on labour market dualization have focused on examining a dualistic pattern of divisions across different countries while paying attention on the increase of atypical employment and unemployment over the past few decades (e.g. Häusermann and Schwander, 2012, Palier and Thelen, 2012, Seeleib-Kaiser et al., 2012). As a result, not much attention has been given to analysing the variations of labour market divisions across different countries. In particular, there has been little research on examining liberal labour markets such as the UK and empirically investigating whether the dividing patterns and features of divisions in this country are similar or different from the existing theories' arguments. Thus, this thesis has attempted to fill these gaps through exploring the labour market divisions in the UK and empirically testing the theoretical understanding of the divisions including the dual labour market, labour market segmentation theory, insider/outsider theory and dualization.

As touched upon earlier, the institutional structures and characteristics of the UK labour market are relatively different from other continental European countries. Thus, this thesis first explored how and to what extent the UK labour market has transformed over the last 50 years, by reviewing the recent labour market policy changes and institutional settings before undertaking empirical examinations of the UK labour market divisions. From this, it aimed to

view the relations between the UK's distinctive institutional features and policy development and employee's employment and income conditions as well as their positions for the future. Furthermore, it attempted to evaluate how their institutional setting has influenced the divisions in the UK labour market.

In the empirical analytical chapters, two different approaches were taken to analyse the divisions in the UK labour market. Firstly, it empirically explored the pattern of divisions in the UK labour market over the past 20 years, specifically looking at the employed population. By examining a range of different income and employment characteristics of individuals, I attempted to capture the non-homogenous characteristics of the labour force and measure how people in the labour market are divided into different labour segments. Furthermore, as the latent class modelling takes diverse labour market indicators including employment and income as well as social security positions, it allowed me to examine the patterns and features of divides in a much more holistic sense in comparison to other studies that rely on the pre-defined indicators. Secondly, built on the first empirical analysis, I examined the extent of positional stability of individuals within the divided labour groups over the past 20 years and explored whether the positions of individuals are stable or not in divided labour groups over the past 20 years. Much of the existing literature has pointed out that the stability of the divided labour groups is a prominent feature to explain labour market divisions as the segmentation in the labour market would not be a major problem if there is frequent mobility between the divided groups. However, few studies have actually measured the mobility patterns of individuals between the divided labour groups over a period of time as not much attention has been paid into analysing the distinctive patterns of labour market divisions at the individual country level. Thus, the stability of the UK labour market divisions is thoroughly examined here.

Another investigation of this study was to see how these divided labour segments are different by looking at the various individual features in each labour group and compare whether the nature of each labour segment is relatively similar or different to the claimed arguments. There have been many studies that provide general and descriptive analyses of labour market divisions and they often argue that gender, age and education are important predictors to distinguish the different character of labour segments (Häusermann and Schwander, 2012,

Schwander and Häusermann, 2013, Biegert, 2014). As I have shown in chapter 5, the UK labour market has been divided into the three labour segments with a clear presence of groups representing the insiders and outsiders. Thus, through the use of the multi-nominal logistic regression modelling, it was examined which individual level characteristics are better for distinguishing the different features of the labour segments. Furthermore, these three different yet inter-related research topics were investigated, using the data set of the BHPS from 1991 to 2008 and the Understanding Society for 2010.

The results of the three substantive research analyses, presented in this thesis, showed clear empirical evidences that there are distinctive patterns of divisions in the UK labour market and the stability of the divided groups is relatively strong. In particular, by investigating the country in which divisions/dualization are deemed to be less likely to occur due to their liberal economic structures, this thesis attempted to provide the new evidence for the claim that the labour market divisions do exist in the UK but it is presented with relatively different features from what has been assumed.

In this final chapter, I attempt to bring the various parts of the thesis together in order to present the conclusion and elaborate the contribution as well as any implications developed from this thesis. It starts with a short summary of each chapter, highlighting the important findings. In the next section, I will discuss the contribution of the thesis with respect to theoretical, methodological and political aspects. Lastly, it reviews any limitations and implications that emerge from the research and offers a direction for future research.

2. Summary of findings

In this section, I discuss the key findings and conclusions of each chapter in more details.

Labour market in the UK and policy context

Chapter 3 analysed distinctive characteristics of the UK labour market by analysing the transitions of labour market regulations and institutional changes over the last 50 years. It also evaluated how such changes are closely related to the current form of the UK labour market

with liberal labour market structures which is rather different from that of other continental European countries. Throughout the 1980s and 1990s, the UK underwent relatively similar socio-economic changes such as de-industrialisation and globalisation as other advanced industrial countries as continental European countries. However, one of the major different approaches that the UK governments undertook was introducing and expanding deregulated labour market policies across the labour market. Statutory labour market regulations were scaled back and self-regulated liberal market procedures were more encouraged (Deakin and Reed, 2000, Esping-Andersen and Regini, 2000). Thus, the labour market has been mainly operated based on competitive market arrangements with a low level of employment protections (Kim and Kurz, 2001). As a result, the UK became a prototype for liberal labour markets and welfare states in Europe. With relatively limited employment protections across different employment, the precarious nature of work in the UK labour market has also been distinguished with low-paid jobs followed by a high level of income inequality than other features such as atypical employment. Furthermore, these workers are more likely to have limited access to social security (occupational pension), stemming from their relatively weak labour market positions. These analyses suggest that the divisions in the UK labour market may be more distinguished with income levels than other features. What is more, these characteristics of 'precariousness' in the UK labour market can be closely related to the UK's distinctive labour market structures and institutional settings.

The pattern and characteristics of labour market divisions in the UK: Is there dualization in the UK?

There has been a substantial amount of literature that has attempted to conceptualise the features of labour market divisions over the last few decades. In particular, in the early 1970s and 1980s, the UK labour market received much attention from different theoretical literatures with an increase in labour market inequality. However, over recent decades, its focus has been shifted towards Germany and other continental European countries with a rise of atypical employments (Eichhorst and Marx, 2012, Palier and Thelen, 2012). The dualization theory and its empirical literature have placed much emphasis on the precarious nature of atypical employments compared to permanent and full-time employments and define the divisions with different types of employment contracts (e.g. Rueda, 2006, 2007, Emmenegger et al., 2012).

As a result, there has been little empirical research outside the corporatist countries to examine whether and to what extent the labour market divisions have been actually developed. For example, the UK has had relatively low level of atypical employment over time and thus there has not many studies examining the divisions in the UK labour market. However, the level of income inequality in the UK has been largely higher than other western European countries (Robinson, 1999, OECD, 2012). It indicated that individuals in the UK labour market have been divided into different segments but the pattern of divisions might have deviated from the ones from other corporatist countries. To address this issue, the following questions were examined in chapter 5.

Q1. Can we observe a dualized labour market pattern in the UK?

Q2. Does this pattern mirror the existing theories' arguments or can we observe different patterns of division?

Before the analysis, I reviewed the recent literatures that empirically investigated the issues of dualization to find the relevant indicators for measuring the UK labour market divisions. Most studies have commonly agreed that employment/job instability and/or income insecurity are crucial elements to measure the disparities in the labour force. However, there were some deviations to define the labour market vulnerability between the literatures. As touched on above, the employment contract statuses have been used as the most prevalent indicator to measure the dividing pattern in order to demonstrate the different labour market positions between standard and non-standard employment. Nevertheless, other indicators, such as occupational classes and wage levels as well as access to occupational pension have been also addressed as relevant factors to capture individual labour market risks and social security statuses respectively (Schwander, 2010, Emmenegger et al., 2012, Schwander and Häusermann, 2013). Occupational profile allows for tracing employment trajectory of individuals so that it provides more stable and long-term perspectives of employment paths for individuals than the employment contract types. The wage level is also highlighted to be an important and explicit indicator to capture the degree of income insecurity, especially in a country where low-paid jobs are numerous but the level of atypical employment is low. In addition, occupational

pension provides the accessibility of social security through employment positions thus, it is often used to distinguish dualization of social policy. Therefore, this study incorporated these four different indicators to measure the labour market divisions in the UK in chapter 5. In order to identify the distinctive patterns of divisions and its feature between 1991 and 2010 in the UK labour market, the multi-group LC modelling was applied. Using different time points as a covariate, this analysis presented the dividing patterns of divisions across the past 20 years as well as the annual variations across the different time points.

The results showed that the UK labour market has been divided into the three specific labour segments throughout the period of 1991 and 2010, i.e., the "insider", "outsider" and "future insecure" group and such a pattern has been presented without much changes over time. The people in the "insider" group were characterised with a stable employment with full-time and permanent employment contracts and secure income for now and the future through having occupational pension. In contrast, the "outsider" group was highly likely to be in low-pay and low strata in the occupational classes. This group is, also, unlikely to have occupational pension through their work. The third group, namely the "future insecure" class, was less likely to be in low-pay and involuntary part-time employment, but is more likely to be in temporary employment without having access to occupational pension. In other words, people in this group might have the stability within their jobs and income now, but this might not persist in the future due to the lack of income security through pensions and the instability of their employment contracts. As a result, it has been summarised that the UK labour market has been divided with the different labour segments and there was a clear presence of groups representing the insiders and outsiders. While the third group was found, the biggest distinction between the existing groups was the divisions between the "insider" group and others. The results also clearly presented that the employment contract statuses, commonly used as main indicators to measure the extent of labour market divisions within recent literature, did not necessarily play a big role to divide the UK labour force. The division pattern was more clearly defined by income levels, occupational profile and social security benefit stemming from employment.

The stability of divided labour market: Has the divided labour force been remained in the same group over time?

From chapter 5, it is found that the dividing patterns in the UK labour market are relatively stable over the last 20 years although sizes of the labour segments have shown some variations over time. However, this does not guarantee that there is limited mobility *between* the different segments of the market. Thus, chapter 6 focused on investigating the inter-mobility patterns of individuals between the three labour segments from 1991 to 2010 using the longitudinal individual level analysis - i.e. latent transition analysis. By assessing the mobility patterns of individuals between the labour segments with short (1 year), mid (3 years) and long-term (5 years) time intervals between 1991 and 2010, it was examined that whether the positional stability of individuals is varied with different measuring time points and time scales.

Many existing studies argue that wide-spread pressures on labour market divisions is closely related to a confined mobility channel between the labour market segments (e.g. Doeringer and Piore, 1971, Lindbeck and Snower, 2001, Emmenegger et al., 2012). This is built on presumption that there is unequal distribution of labour market positions and such circumstances compose non-competing labour segments in the labour market. In this context, people on the outside of the labour market or vulnerable groups of workers do often find it difficult to cross the barrier that exists at the "insider" market or upper segment and may be trapped within their disadvantaged positions. Thus, the stability of each labour segment become stronger and subsequently the divisions in the labour market can become widespread or deeper. However, there are only a small number of empirical studies that actually test the degree of mobility/stability patterns between the labour segments. To the author's knowledge, the work by Biergert (2014) is the only recent study that examines the transition probabilities between the labour market segments. However, this literature again relies on the pre-defined patterns of division based on the definition given by the dualization theory - i.e., employment contract types and unemployment. The other studies rather focus on examining the specific transition patterns of employment statuses - i.e., unemployment to temporary/permanent jobs or temporary jobs to full-time and permanent work- or income levels (e.g. Booth et al., 2002, Pavlopoulos et al., 2012, Pavlopoulos, 2013). As chapter 5 derived the distinctive patterns of divisions in the UK labour market, chapter 6 assessed the inter-mobility patterns between these

labour market segments. Built on the empirical results from chapter 5, the research question of chapter 6 is constructed as follows.

Q3. What are the mobility patterns of workers in different labour segments over time?

In order to examine the transition patterns of workers between the three labour segments over time, the same data and variables for the multi-group latent class models were used. However, the techniques of LTA only track the transition probabilities for people who have been in the employed position for the period of time points each model measured. Thus, before undertaking the LTA, the extent of people who have moved out from the dependent employment status to other positions (i.e., unemployment, economically inactivity and self-employment), was firstly explored using a cross-tabulation analysis. Then, the inter-mobility patterns between the labour segments were explored among the employed with the short, mid and long-term period scales from 1991 to 2010.

The outcome of the analysis showed that the UK labour market tends to have a limited mobility chance between the divided labour groups. In other word, the positional stability of individuals at each labour segment has been significant over time. In particular, the stability of the "insider" group was notably strong regardless of the differing time points and scales (less than 5 per cent of mobility chance out of the position in the short, mid and long-term). The results also showed that the transition probabilities into the "insider" group are actually smaller than what has been argued within the existing literature. Transition was more frequently observed between the "future insecure" and "outsider" class in the longer-term scale. In other words, the strong stability pattern was generally observed at each labour segment with the short and mid-term time frame. This indicated that the barrier that exists between the "outsider" and "future insecure" group is relatively easier to break than the one at the "insider" group. In terms of transition patterns to outside of the labour market, people from the "outsider" and "future insecure" groups, were at a higher risk of losing their labour market positions and become either the unemployed or economically inactive than the insiders. This finding again confirmed that the people in the "insider" group have a stronger employment stability than the other groups.

What are the barriers to access the divided labour market?

The final issue addressed in this thesis was to find indicative predictor(s) in explaining the divided labour market in the UK. Chapter 5 and 6 showed that the UK labour market has been divided but the dividing patterns and its stability were relatively different from what has been assumed. Thus, the main interest in chapter 7 was to examine who were more prone to be included in these labour segments and to what extent the composition of each labour segment was similar/different from what has been argued within the existing literature.

Prior to the analysis, I examined which variables are more relevant to indicate the causal relationship of labour market divisions in the UK reflecting the key theoretical and empirical literature on the labour market divisions. A number of previous studies have pointed out that the human and social capital characteristics such as gender, age and education as well as union membership can be crucial factors to distinguish the different characteristics of labour segments. In addition, the several company-level characteristics such as differences of working in public versus private sector and firm sizes may capture the different nature of the labour market segments. However, as discussed in chapter 3, the system of the UK labour market institutions has been developed relatively differently from the other continental European countries. For example, the labour market regulations and employment protections have been less stringent compared to the ones in continental European countries. Furthermore, the power and size of trade unions have been significantly reduced over the past few decades in comparison to the ones in European countries, putting the assumption that the trade union membership would not play a significant role in segmenting the labour force in the UK labour market. What is more, not much attention has been given to the UK labour market in recent times, particularly the different features of labour market segments by investigating the individual level characteristics over the last 20 years in accordance with the changes of labour market policies and institutions as well as economic cycles. Therefore, it was considered to be worthwhile to examine who are more likely to compose these labour segments in the UK labour market. The following questions were examined specifically in this chapter.

Q4. Who has been most affected by labour market divisions over time and what are the main indicators that distinguish the different nature of the labour market segments?

Based on the findings of chapter 5, a multi-nominal logistic regression model was used to estimate the compositional features of each labour segment and examine the indicative predictors(s) to explain the divided labour market structure in the UK. The analysis was conducted annually and provided the evidence that which indicator(s) are most likely to show the different nature of divided labour groups in the UK. For this, the model included various variables including gender, age, education, previous unemployment experience, health conditions, migrant status, family structure, public companies, company size, and role of trade unions.

The outcomes of this analysis showed that the many independent variables did explain the distinguishing patterns of divided labour markets in the UK. In particular, gender, age and the education captured the different nature of the three divided labour market segments through the period of 1991-2010. Moreover, education did seem to have more a powerful impact on the divisions in the period of economic crisis as comparing its effect size over time. Another interesting finding was that the trade union still seemed to have a significant impact on the division in the UK labour market, particularly between the "insider" group and others. Although the effect size of trade unions has been seemingly reduced over time, which is relatively similar to the effect of gender, the union members in the UK labour market are still more likely to be in the better off position to be in the "insider" group than non-union members. This is contrary to what has been generally assumed in the existing literature. Among the control variables, public companies and firm size have also distinguished the different nature of the divided labour groups overtime, particularly the distinctive nature of the "insider" group compared to others. Furthermore, people with a full employment record without having unemployment experiences were more likely to be in the "insider" position most of the time but this variable became insignificant in 2010. Such a change tends to be closely related to the impact from the financial crisis in the late 2000s. What is more, the analysis showed that the individual characteristics of the "insider" group are substantially different from the other groups. Such a finding is in line with the outcomes from the previous chapters that the divisions between the "insider" and the other groups are clearly presented and this implies that the dualization not only occurs in the Continental Europe but also in the liberal countries like the UK.

3. Implication and conclusion

From this study, several implications could be discussed, in relation to theoretical, methodological and political aspects.

3.1 Implication for theory and knowledge: Importance of understanding the dynamics of labour market divisions

This study has introduced a new approach in examining labour market divisions, which allows for capturing the distinctive patterns and characteristics of the UK labour market divisions over the past 20 years. Previous studies rely heavily on pre-defined patterns and characteristics of market divisions that are largely based on theoretical understanding of labour market changes over recent decades. Thus, the pattern of division is often characterised with a group of people finding stable and secure employment (insiders) and those failing to do so (outsiders). Furthermore, much literature has assumed that the UK is less likely to experience the divides in their labour market than other countries. One of the reasons for this is that the institutional arrangements of the UK flexible labour market structure leads to lower labour turnover costs and thus a smaller gap between the divided labour groups to be expected than other continental European countries such as Germany (Biegert, 2014:7). However, this study showed somewhat different results. The UK labour market has been divided into three specific labour groups, with a clear presence of the "insider" and "outsider" group. These results provide strong evidence to show that the segmentation in the labour market can be prevalent even outside the corporatist countries. Furthermore, the pattern of divisions is more clearly identified with individuals' income levels (low pay), occupational profile (low-skilled occupations) and social security benefits stemming from employment (occupational pension coverage) rather than employment contract statuses (atypical employment). This suggests that there can be clear cross-national variations in defining the divided labour groups. Therefore, such results brought forward a new dimension of empirical evidence that the patterns and characteristics of labour market divisions may not be generalised in one singular pattern across countries and further empirical investigations are need to understand the cross-national variations of labour market divisions. While the clear dividing patterns have been identified in the UK labour market over the past 20 years, the stability of these divided groups through examining individuals' mobility patterns

between the labour segments has been still questionable. This is partly due to the fact that there has not been much recent literature that measures the stability of labour segments in the longitudinal modelling context although the limited mobility channel between the labour segment has been discussed as an important feature in explaining the segmentation of labour markets. The existing literature have rather demarcated the analysis by focusing on the transition possibilities either from (long-term) unemployment or atypical employment to full-time standard employment (Booth et al., 2002, Biegert, 2014). In addition, several studies are expected that the upward mobility tends to be more visible in liberal labour markets like the UK, especially at the bottom of the wage distribution than other European countries in relation to their liberal labour market structures (Stewart and Swaffield, 1999, Cappellari and Jenkins, 2004). However, the stability of the labour segments in the UK labour market was relatively strong which is contrary to what has been assumed in the existing literatures. The findings of the analysis in chapter 6 provided the concrete empirical evidence on the status stability of the labour market segments over the last 20 years, particularly showing the distinctive and strong stability of the "insider" group. This is in line with the theories on labour market divisions that the barrier constructed at the "insider" class is harder to break through and thus, the curtailed mobility patterns can generate a deeper segmentation. However, as discussed before, the main indicators to explain the dividing pattern of the UK labour market is not purely identified with the atypical contract status of workers but more with others features such as income and occupation profiles. When using the existing theoretical definition of labour market divisions, that most other scholars use – such as atypical contract status etc. – such stability patterns may not be observed. In other words, the one of the reasons that I could find the strong stability patterns of labour market divisions in the UK is because of how I identified the exclusive patterns of divisions in the UK labour market based on the empirical analysis of the segmentation. Such a finding again highlights the cross-national variations in the labour market divisions and the importance of examining country-specific patterns and stability of divisions.

Furthermore, this study has provided an empirical critique on the presumption of who is in and out of the labour market over time. The recent existing studies have placed an emphasis with regard to the relatively different compositions of labour market segments across the welfare regimes and countries due to the different institutional settings and structures (Häusermann and Schwander, 2012). In the case of the UK, it is often argued that the education and skill levels

can be the most influencing factors to distinguish the different nature of labour market segments (Häusermann and Schwander, 2012, Schwander and Häusermann, 2013, Biegert, 2014). The results in chapter 7 corroborated the existing argument on the education. The analysis delivered extensive empirical evidence that individuals with high education more likely to find themselves in the "insider" group. Such findings confirm the arguments set forth by human capital scholars (e.g. Backer, 1962,1964; Mincer, 1970) that the education attainment has a significant impact on an individual' labour market status and subsequently dividing the labour force into the different segments. It is also important to note that the relations between education and labour market divisions in the UK was actually much stronger than what has been expected and its effect size has increased over the past 20 years. Furthermore, the trade union has shown to be one of core driving factors to reinforce the divisions between the insiders and outsiders although the effect size has been seemingly decreased over time. This is contrary to what has been argued in previous studies. In addition, by assessing the before and after the financial crisis in the late 2000s, it showed that the composition of each labour segment could be changed to some extent. It implied that economic market situations, business cycles and structures can be also influential factors to define the nature of each labour segment.

In broad terms then, the overarching finding from across the empirical chapters seems to be largely consistent with the argument of the dualization theory (e.g. Emmenegger et al., 2012, Häusermann and Schwander, 2012, Schwander and Häusermann, 2013). The empirical results indicated that the UK labour market has been divided with the presence of the "insider" and "outsider" group. Although the different employment contract statuses are not key indicators to identify the labour segments, the major findings show that people in precarious positions in the UK labour market do not have access to social security benefits (occupational pension), stemming from their unstable and insecure labour market positions. This confirmed the theories set forth by dualization scholars (e.g. Emmenegger et al., 2012) that dualization can be observed not only in the labour market but also in other spheres such as social security system.

However, it is worth reiterating here again that the pattern of divisions has been different from what has been assumed. The dividing line of the UK labour market is not clearly presented with full-time and permanent employment versus atypical employment, thus often presumed to be less likely to be divided. However, there are other divisions being made. The features of

divisions were also evidently represented with low and high skill - education cleavage - as the literature on VoC has argued with their liberal labour market and welfare state regime (Hall and Soskice, 2001, Wren, 2013). Such results can be analysed that competitive market arrangements and low levels of employment protections based on the structure of liberal market economies with flexible labour market policies provide advantages to employees with higher level of skills and education to be an "insider". This means that the national-level institutions do influence in dividing the labour market. However, it is important to reiterate here that the different institutional contexts and settings can have varied effects in developing different features and patterns of divisions across countries. Thus, the further in-depth attention such as a cross-national comparative study is required in the future to provide more transparent and substantive knowledge of dualization across different countries.

3.2 Implications for labour market and welfare policies

The empirical results obtained in this study have produced various findings with regards to the issues of labour market divisions. Concerning the patterns of divisions in the UK, the evidence in the first empirical chapter of this thesis particularly highlights that the people in the "outsider" group is more identified with the indicators of the low wage, low strata of occupation and limited access to occupational welfare rather than the atypical contract status. In addition, the second analytical chapter presents that the mobility chance for the outsiders to become an insider has been fairly limited and it takes a long time. These findings have important implications for policy makers. First of all, with regard to the low wage issue, in chapter 3, I discussed the minimum wage policy in the UK which was re-introduced under the New Labour government in order to protect low-paid workers and support them to stay out of poverty. However, the minimum wage did not seem to provide its vital role as a foundation to support people not to be at a risk of poverty while they work. For instance, the minimum wage has fallen in real terms from 2008 and it is recognised that 6.7 million people are in work poverty in 2013 which is a higher number than those in workless or retired people who are under the poverty line (6.3 million) (MacInnes et al., 2013). It implies that the statutory minimum wage strategy has not performed to be an effective wage floor for people, particularly those in low-paid jobs in the UK liberal economy. This implies that the people in the "outsider" segment tend to be at a higher risk to fall in the in-work poverty since most people in this group are

highly likely to be in the low-paid jobs. Second, in the UK, it is discussed that there was no mandatory obligation for employers to provide occupational pension to their employees until 2012. Consequently, people in the precarious employment such as low wage workers were less likely to have occupational pension through their work. This is confirmed with the results in chapter 5 that almost no one in the "outsider" group has an occupational pension. This means that the way the UK labour market is divided and how the features of the "outsider" has been formed are intimately associated to the development of pension policy in the UK. In order to decrease the in-work poverty issue as well as strong segmentation between the labour segments in the UK labour market, the government should provide more support for the people who are in work, especially at the bottom of wage distribution. For example, introducing 'living wage', which is calculated based on essential items people need for a minimum acceptable standard of living, can be an alternative options for providing a mandatory living wage floor across the economy instead of minimum wage (Hirsch and Moore, 2011). As the notion of the living wage rests on the idea that purchasing power is necessary to provide workers and their families for a basic but acceptable standard living (Pennycook, 2012), there is a great difference from the concept of minimum wage which is developed from the estimates of what the market can bear without impact on employment (Ibid). This living wage scheme was supported by the labour party from last general election and recently the current conservative government made an announcement of introducing the national living wage for the protection of a legal pay floor in 2015. However, as the new statutory living wage level is much lower than what it is supposed to be set and it is deemed to relatively similar to the existing national minimum wage but just renaming the minimum wage policy. Therefore, there has been already much criticism for introducing this policy (Bourne, 2015, Scott, 2015)

This study also provided the concrete evidence of different individual characteristics in each labour segment and which indicators are the key driving factors to segment the UK labour market by taking account of the various aspects. The results of chapter 7 could provide important implications for policy makers, especially on welfare provisions. Since education has been seemingly one of the most influential individual factors to describe the different nature of labour segments, it should be important to make education more affordable for young people, particularly tertiary education, for alleviating the segmentation of labour market, defined by different levels of education between the "insiders" and other two groups. In this stance, a

newly introduced tuition fee in higher education in 2012 along with the abolishment of the student maintenance grants in 2015 brought much concerns for heightening the extent of labour market segmentation and further increasing class divides. Although such a measure is in line with decreasing the public spending and supporting the recovering economy from the financial crisis in the late 2000s, the results of this thesis imply that the access to the high education should be more approachable and affordable for those who are willing to take the tertiary education, in order to make lower barrier between the labour segments and decrease the extent of divisions in the labour market. Furthermore, the results in chapter 7 provided that the age is also one of crucial factors, along with education, to distinguish the different characteristics of labour segments. Especially, the empirical evidence in chapter 7 distinguished that the young workers aged between 16 and 25 were highly likely to be in the "outsider" group than the other age groups. This can be partly due to a lack of work experiences or skills for young people compared to other age groups.   However, as briefly described in chapter 3, the current wage policy especially, 'development rate' in the statutory minimum wage for those age 18 and 20 and age 16 and 17 does not seem to protect young workers from the labour market vulnerabilities. Since these rates are considerably lower than the minimum wage for those aged 21 and over, some scholars in dualization theory argue that the institutional dualization have let young workers to be exposed in the outsiderness (Rueda, 2014). In other words, concerning that young workers and new labour market entrants are more often exposed at the labour market risks due to their   lack of experiences and skills, the guideline of various rates of minimum wage between different age groups may further reinforce the institutionalised segmentation in the labour market.

3.3. Lessons for methods and data

This study made use of three different quantitative data analyses including the latent class, latent transition and multi-nominal logistic regression models. These methods, particularly the latent class and latent transition models, have not been yet frequently applied in social policy and labour market studies to measure the concept of labour market divisions. The use of these methods provided new insights into examining the issues concerning the dualization and

understanding the dividing nature of the UK labour market. First, by applying the latent class modelling, chapter 5 provided the empirical evidence to show exactly how the UK labour market has been divided over the past 20 years. The latent class models also allowed for testing the theoretical assumptions on the labour market divisions. By incorporating diverse indicators suggested in a range of literatures, especially the dualization theory, the latent class models captured the discrete labour market segments which has been distinguished with different income levels, occupational profile and occupational pension coverage. In other words, the analysis results suggest that there is no 'one-size fit all' approach in labour market divisions. All in all, latent class analysis techniques provide valuable analysis capabilities to understand the labour market divisions, better than some of the previous methods applied in the existing literature.

Based on the empirical findings in chapter 5, the latent transition modelling empirically tested the issue concerning the stability of the segmented labour market. This study was one of the first to use the LTA technique to measure the stability of the labour segments with a longitudinal data. Chapter 6 showed the strong stability of the labour segments over the past 20 years by estimating the transition patterns of individuals with different time points and scales, including short, mid and long term time. Such empirical results presented in this thesis deviated from the previous studies on mobility patterns in the UK labour market (Booth et al., 2002, Cappellari and Jenkins, 2004). It also confirmed the theoretical argument on labour market divisions that the curtailed mobility channels between the labour segments produces the deeper/wider divisions (Gordon et al., 1982, Lindbeck and Snower, 2001, Emmenegger et al., 2012). What is more, the results provide the more accurate findings on measuring the inter-mobility patterns between the labour markets since the LTA is a longitudinal extension of a LCA. Therefore, such results highlight the advantages of using longitudinal individual level analysis.

4. Limitation of the study and implication for future study

This thesis has examined the issue of labour market divisions by exploring the country-specific patterns of divisions, its extent of stability and the key driving individual factors to segment the labour market. By focusing on the country where not much attention has been given in

analysing the divisions/dualization in the labour market - the UK - the study attempted to contribute various findings to the existing theoretical and empirical literature. However, there are some limitations in this study to note. First, the data used throughout this thesis has a few constraints. Literature including Bound et al. (2001) and Pavlopoulos et al. (2012) points out that studies with a panel data set may have measurement errors. These studies state that there are occasions that survey respondents may not understand the points of questionnaires so that provide the wrong answer or misreport answers, especially with sensitive subjects such as income level. Thus, these mistakes can give rise to both bias and variable errors in a survey estimate over repeated trials of the survey (Kasprzyk, 2005:172). Given that this study used the panel survey data (the BHPS and Understanding Society), it is important to note that the data set might have contained measurement errors. Furthermore, the latent transition modelling followed the labour market participation trajectory of the BHPS original members, specifically the dependent employees longitudinally. Hence, this measure was subject to have high rates of missing data when it measured an individual's carrier path in the long-term period. Therefore, there is certainly room for further research that uses other data set and check whether derived outcome would resemble.

Second, it is acknowledged that further research of examining the cross-national variations in the labour market divisions should be carried out. In this study, I have attempted to illustrate how the patterns and features of labour market divisions in the UK are different from what has been assumed within the existing literatures and emphasised the importance of examining the labour market divisions across countries. However, it is still largely unknown how labour markets are divided and to what extent the patterns and features of divisions vary across different countries. This can be only through the cross-national comparative research, examining unique patterns of labour market divisions at an individual country level and investigating a relative stability of each labour segment. Therefore, future research should examine other country cases and compare similarities and differences of labour market divisions. This can support to further develop theoretical framework on labour market divisions and contribute the extensive knowledge to the dualization literature. Through this, it can be also more accurately claimed whether there are national variances in labour market division across countries and if so, to what extent the patterns and stability of divisions are similar/different from the existing literature.

What is more, it is worth noting that the variables used in this thesis to distinguish the differences of the labour market segments may not be entirely comprehensive, in that they were not able to capture every aspect or every possible angle of the various potential factors to affect the labour market divisions in the UK. This was particularly true as there were constraints on the availability of data within the BHPS and Understanding Society survey, especially when the BHPS was incorporated into the Understanding Society data set in 2008. For example, there is no official data for 2009. Considering that this particular year - 2009 - falls just after the financial crisis in 2008, the empirical analysis did not capture a clear and full picture of the immediate after effect of the financial crisis. Moreover, as a single country case study, it is unable to measure the impact of institutions or the contextual effect directly in the analyses. Such a limitation again emphasises the necessity of a cross-national comparative research on labour market divisions although I attempted to take account of the recent labour market policy and institutional changes while investigating the development of the UK labour market divisions. Through the use of longitudinal multi-level modelling, it can empirically explore different levels of the key driving factors that determine the labour market divisions including individual level variables as well as aggregate country level variables, such as GDP, unemployment rate or trade union density. Furthermore, it allows for explaining how this dynamic process has taken place in different countries over a set period time. Such research will establish the concrete evidence on the different determinants of the labour market divisions across countries, and draw clear pictures of the varied patterns of labour market divisions in relation to their respective welfare regimes, the conditions of market economies and labour market policies.

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Appendix

Table 1. Estimated P-value and confidence intervals from the multi-nominal logistic regression models

	1991						1995					
	Future insecure			Insider			Future insecure			Insider		
	p-value	95% IC		p-value	95% IC		p-value	95% IC		p-value	95% IC	
Individual level characteristics												
Gender *(ref. female)*												
Male	0.00	2.93	4.50	0.00	5.85	9.29	0.00	2.76	4.44	0.00	4.36	7.21
Age*(ref. 16-25)*												
26-35	0.00	1.47	2.67	0.00	3.05	5.95	0.00	1.76	3.43	0.00	3.13	6.57
36-45	0.00	1.40	2.60	0.00	3.43	6.92	0.00	1.78	3.72	0.00	3.65	8.17
46-55	0.03	1.04	2.06	0.00	3.07	6.49	0.02	1.09	2.27	0.00	2.46	5.45
56-65	0.17	0.89	1.99	0.00	1.89	4.63	0.02	1.09	2.77	0.00	2.04	5.48
Education *(ref. low school or below)*												
Vocation or high school	0.00	1.45	2.24	0.00	2.65	4.24	0.00	1.55	2.59	0.00	2.87	5.04
Diploma	0.00	2.51	5.01	0.00	6.83	13.85	0.00	2.09	4.04	0.00	5.57	11.04
Degree	0.00	2.07	6.32	0.00	10.21	30.79	0.00	2.90	9.70	0.00	14.49	47.41
Unemployment experience *(ref. unemp spell)*												
No unemployment spell	0.08	0.96	2.02	0.00	1.95	5.46	0.36	0.55	1.24	0.00	2.02	5.63
Health status*(ref. poor)*												
Fair	0.64	0.68	1.88	0.10	0.91	2.83	0.71	0.63	1.99	0.28	0.40	1.31
Good health	0.54	0.55	1.37	0.45	0.73	2.04	0.31	0.77	2.24	0.75	0.53	1.58
Immigrant status*(ref. foreign born)*												
Native-born	0.99	0.66	1.51	0.07	0.97	2.32	0.46	0.43	1.47	0.61	0.45	1.60
Marital status*(ref. non-married)*												
Married	0.12	0.95	1.54	0.02	1.04	1.72	0.66	0.82	1.37	0.07	0.98	1.69
No child(ren) *(ref. having children)*	0.12	0.95	1.57	0.01	1.08	1.81	0.22	0.90	1.58	0.08	0.97	1.75
Company level characteristics												
Public companies *(ref. non public companies)*	0.67	0.82	1.37	0.00	1.41	2.38	0.57	0.81	1.48	0.00	1.63	2.93
Firm size*(ref. 1-9)*												
10-49	0.00	1.65	2.66	0.00	2.45	4.23	0.00	1.23	2.12	0.00	1.85	3.41
Above50	0.00	1.91	3.09	0.00	5.68	9.71	0.00	2.01	3.49	0.00	6.26	11.57
Union membership *(ref. non union member)*												
Union member	0.05	1.01	1.67	0.00	2.83	4.65	0.07	0.98	1.87	0.00	3.08	5.75

	2000						2005					
	Future insecure			Insider			Future insecure			Insider		
	p-value	95% IC		p-value	95% IC		p-value	95% IC		p-value	95% IC	
Individual level characteristics												
Gender *(ref. female)*												
Male	0.00	2.64	4.24	0.00	4.01	6.53	0.00	2.10	3.53	0.00	2.72	4.60
Age *(ref. 16-25)*												
26-35	0.00	1.93	3.91	0.00	4.31	9.41	0.00	1.82	4.20	0.00	3.98	9.69
36-45	0.00	1.40	2.94	0.00	4.74	10.69	0.03	1.04	2.48	0.00	3.54	8.86
46-55	0.00	1.81	3.95	0.00	4.99	11.52	0.01	1.11	2.56	0.00	3.41	8.24
56-65	0.00	1.57	3.95	0.00	2.39	6.36	0.19	0.86	2.20	0.00	1.71	4.71
Education *(ref. low school or below)*												
Vocation or high school	0.00	1.53	2.74	0.00	2.69	5.00	0.00	1.51	3.09	0.00	2.68	5.68
Diploma	0.00	2.31	4.34	0.00	4.13	7.92	0.00	1.95	4.05	0.00	3.80	8.05
Degree	0.00	4.64	13.90	0.00	18.19	54.51	0.00	3.77	11.56	0.00	14.58	43.92
Unemployment experience *(ref. unemp spell)*												
No unemployment spell	0.02	1.08	2.68	0.00	2.02	6.18	0.11	0.91	2.85	0.00	1.73	7.22
Health status *(ref. poor)*												
Fair	0.28	0.79	2.28	0.57	0.69	1.98	0.20	0.82	2.67	0.38	0.72	2.37
Good health	0.27	0.81	2.13	0.24	0.83	2.15	0.05	1.00	2.95	0.03	1.07	3.18
Immigrant status *(ref. foreign born)*												
Native-born	0.65	0.37	1.87	0.59	0.35	1.80	0.46	0.59	3.28	0.38	0.64	3.17
Marital status *(ref. non-married)*												
Married	0.07	0.60	1.02	0.12	0.95	1.59	0.23	0.90	1.59	0.04	1.02	1.81
No child(ren) *(ref. having children)*	0.03	0.56	0.97	0.86	0.78	1.34	0.12	0.94	1.73	0.04	1.02	1.86
Company level characteristics												
Public companies *(ref. non public companies)*	0.72	0.69	1.29	0.00	1.82	3.25	0.16	0.55	1.11	0.00	1.70	3.20
Firm size *(ref. 1-9)*												
10-49	0.08	0.97	1.68	0.00	1.51	2.72	0.15	0.92	1.70	0.00	1.54	2.92
Above50	0.00	1.30	2.26	0.00	4.11	7.36	0.00	1.17	2.16	0.00	4.00	7.53
Union membership *(ref. non union member)*												
Union member	0.82	0.75	1.44	0.00	2.39	4.29	0.14	0.91	2.02	0.00	2.75	5.63

| | 2010 | | | | | |
| | Future insecure | | | Insider | | |
	p-value	95% IC		p-value	95% IC	
Individual level characteristics						
Gender *(ref. female)*						
Male	0.00	1.31	2.73	0.00	1.89	3.89
Age*(ref. 16-25)*						
26-35	0.00	1.37	5.18	0.00	3.95	15.65
36-45	0.18	0.82	2.91	0.00	2.74	9.95
46-55	0.97	0.52	1.88	0.00	2.65	9.67
56-65	0.00	1.43	5.86	0.00	3.91	17.05
Education *(ref. low school or below)*						
Vocation or high school	0.08	0.95	2.92	0.00	2.04	7.15
Diploma	0.00	1.47	4.51	0.00	3.86	13.36
Degree	0.00	2.36	15.64	0.00	19.22	127.91
Unemployment experience *(ref. unemp spell)*						
No unemployment spell	0.42	0.07	3.00	0.82	0.13	5.04
Health status*(ref. poor)*						
Fair	0.02	1.14	3.25	0.07	0.97	2.64
Good health	0.00	1.89	5.25	0.00	2.15	5.70
Immigrant status*(ref. foreign born)*						
Native-born	0.25	0.65	5.28	0.00	1.59	10.94
Marital status*(ref. non-married)*						
Married	0.18	0.88	1.95	0.03	1.04	2.21
No child(ren) *(ref. having children)*	0.88	0.63	1.49	0.69	0.72	1.64
Company level characteristics						
Public companies *(ref. non public companies)*	0.71	0.52	1.57	0.00	2.11	5.56
Firm size*(ref. 1-9)*						
10-49	0.70	0.70	1.71	0.00	1.60	4.22
Above50	0.22	0.85	2.05	0.00	3.12	7.99
Union membership *(ref. non union member)*						
Union member	0.50	0.51	1.38	0.00	1.30	3.21