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The social origin pay gap in the UK labour market

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Abstract

This thesis is composed of four chapters; a critical literature review and three empirical chapters that examine the social origin pay gap in the UK labour market. The overarching research question of this thesis is: To what extent does social origin explain labour market outcomes independently of level of education?

Chapter 1 provides a critical literature review of the social origin pay gap evidence base. Chapter 2 investigates whether recent empirical studies have underestimated the social origin pay gap by omitting respondents with undefined social origins. Specifically, this relates to individuals that were not assigned a social origin because their household composition was not clear, nobody was earning in the household, or the occupational identity of the main wage earner could not be identified. Data from the Labour Force Survey (LFS) is analysed to establish the prevalence of undefined social origins and to what extent the socio-economic characteristics of those with undefined social origins are different from those who can be identified using the Standard Occupational Classification (SOC). We examine how omitting these groups affects estimates of social origin pay gaps. The results show that 10.5% of the working age population have undefined social origins and that the labour market outcomes of these people are on average much worse than those with defined social origins. Results show that omitting these respondents underestimates the range of the social origin pay gap and the number of people affected. This highlights that there is a further effect of parental association with the labour market or not clearly belonging to a household, which profoundly affects the life outcomes of a substantial share of the working age population.

Chapter 3 uses data from waves 1 to 9 of the United Kingdom Household Longitudinal Study (UKHLS) to examine the social origin pay gap and item non-response for social origin in relation to the pay gap. Following the dominance approach – proxying for respondents' social origin via the 'highest' occupation of their parents when they were 14 – we observe a significant pay gap for those with undefined social origins in eight of the nine waves and a significant pay gap for those from NS-SEC 5 and NS-SEC 6 origins in seven waves. The pay gap is largest for those with undefined social origins in seven of the nine waves. When we examine the pay gap longitudinally, we find the pay gap is largest for those with undefined social origins, at 11.7%, followed by those from NS-SEC 7 origins at 11.2%. When we use total parental occupation as a proxy for social origin, we observe that the pay gap is generally larger for those from 'lower' social origins, particularly respondents whose parent(s) were economically inactive. This result supplements the findings from Chapter 2

in that individuals with undefined social origins report a larger pay gap compared to those with defined social origins. We observe similar results when we use parental education, total parental education, and highest parental occupation and highest parental education as proxies for social origin in that the pay gap is larger for respondents from 'lower' social origins. The results indicate the social origin pay gap may be larger when we consider both parents' occupation and/or education.

Lastly, Chapter 4 uses a range of proxies for cultural capital and social capital in the UKHLS to examine how these impact social origin wage gaps. We observe significant pay gaps for all social origin groups, except those from NS-SEC 2 origins, after controlling for cultural capital, educational attainment, and a range of labour market observables. The pay gap is largest for those with undefined social origins at 8.9%, followed by those from NS-SEC 4 origins at 8.7%. This indicates that cultural capital does not fully explain the social origin pay gap and thus we consider respondents' social networks. When we control for social capital, educational attainment, and respondents' labour market features, we observe that the pay gap is significant for those from undefined and NS-SEC 4 to NS-SEC 7 origins. The pay gap is largest for respondents from NS-SEC 4 origins, at 8.3%, and is second largest for those with undefined social origins at 7.9%. This indicates that part of the wage disadvantage experienced by individuals from undefined and NS-SEC 4 to NS-SEC 7 origins is likely to represent the impact of unequal access to social capital. Overall, the results indicate social capital plays a role in explaining the social origin pay gap.

This thesis contributes to the social origin pay gap literature in three ways. Firstly, it examines the pay gaps for all survey respondents, including those with undefined social origins and highlights that omitting respondents with undefined social origins underestimates the magnitude of the social origin pay gap and the number of people affected. Secondly, it considers respondents' parents' occupational status and education to provide a more comprehensive proxy for respondents' social origin to estimate class wage gaps. The results highlight significant pay gaps for those from routine and undefined social origins, indicating the pay gap is larger once we consider both parents' occupational status and education, Thirdly, it uses a range of proxies for cultural capital and social capital to empirically examine to what extent these forms of capital play a role in explaining the social origin pay gap, the first study of its kind to do so. The results indicate that social capital plays a role in explaining the pay gap.

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List of Abbreviations

Abbreviation	Definition
BCS	British Cohort Study
BHPS	British Household Panel Survey
ESRC	Economic and Social Research Council
FDS	First Destination Survey
FEHA	Further and Higher Education Act
GBCS	Great British Class Survey
GCSE	General Certificate of Secondary Education
GPS	General Population Sample
HESA	Higher Education Statistics Agency
LFS	Labour Force Survey
NCDS	National Child Development Study
NS-SEC	National Statistics Socio-Economic Classification
OLS	Ordinary Least Squares
ONS	Office for National Statistics
PSID	Panel Study of Income Dynamics
SOC	Standard Occupational Classification
SES	Socio-economic Status

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Author's Declaration

"I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution."

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Introduction

Recent empirical evidence has uncovered a social origin pay gap in several developed economies, where wages are correlated with class origin even when educational attainment and a range of other observable factors have been considered (Bernardi and Gil-Hernandez, 2021; Britton et al., 2019; Crawford and van der Erve, 2015; Crawford and Vignoles, 2014; Friedman and Laurison, 2017, 2019; Hällsten, 2013; Hersbein and Bartik, 2016; Masketasa, 2011). Studies have also found that individuals from working-class origins receive lower pay than their upper-class counterparts within professional and managerial occupations (Friedman and Laurison, 2017, 2019; Laurison and Friedman, 2016). This has been referred to as the 'class ceiling' due to its similarities with the 'glass ceiling' observed in research on the gender pay gap. The 'class ceiling' refers to 'invisible' economic, cultural, and social barriers which impedes the opportunities, progression, and pay of individuals from working class origins.

Empirical evidence on the social origin pay gap highlights that education alone does not equalise rewards in the labour market. This casts doubt on the notion that education will drive social mobility and challenges the UK government's agenda for economic equality. The social origin pay gap literature demonstrates there are a range of other attributes, independent of educational attainment, which can influence individuals' earnings in the labour market. Such factors include individuals' cultural capital and social capital, which favours those from upper class origins whilst simultaneously disadvantaging those from working-class origins. This has society wide implications for social equity and many individuals. To date, research on the social origin pay gap has primarily focused on the earnings of university graduates, with the evidence highlighting that encouraging working-class adolescents to go on and obtain a 'good' degree is simply insufficient in guaranteeing equal rewards in the labour market. Even when individuals from working class origins do obtain degrees, they are still less likely to secure employment in the highest paying occupations, less likely to progress within such jobs, and are less likely to work in the highest paying sectors, areas, firms, and departments. This evidence highlights that policymakers attentive to equal pay must also focus on the broad scope of attributes which are valued in the labour market to fully comprehend the factors that drive socio-economic inequalities. Policymakers concerned with social justice, education, and economic performance, must consider the evidence from the 'class ceiling' debate to understand and address all the factors that can affect individuals' pay in the labour market.

Empirical evidence on the social origin pay gap has seen the converging of decades of economic and sociological research that has merged to challenge decades of policy intervention aimed at addressing socio-economic inequalities. Economics' emphasis on earnings and education and sociology's emphasis on status have merged over time providing us with a far richer and improved understanding of socio-economic inequalities. In relation to wages, a range of empirical evidence from both economics and sociology has used a range of datasets across several high-income countries and uncovered an unexplained social origin pay gap. This highlights the 'long-shadow' of social origin and how even into adulthood, individuals' social class can affect their wages in the labour market.

Therefore, the overriding research question of this thesis is: **To what extent does social origin explain labour market outcomes independently of level of education?** Secondly, what are the factors mediating the association of wages/employment and social origin? Thus, the main hypothesis that will be explored is that there are a broad range of attributes valued in the labour market, independent of educational qualifications, that are correlated with social origin and that can, at least partially, explain class wage penalties.

This thesis aims to build upon the existing empirical evidence on the social origin pay gap in the UK labour market through conducting secondary data analysis using the Labour Force Survey (LFS) and the United Kingdom Household Longitudinal Study (UKHLS). The LFS is the largest employment survey in the UK and provides nationally representative data (Office for National Statistics, 2015). Chapter 2 examines whether recent empirical studies have underestimated the social origin pay gap by omitting respondents with undefined social origins i.e., those who were not assigned a social origin because their household composition was not clear, nobody was earning in the household, or the occupational identity of the main wage earner could not be identified. Data from the LFS is analysed to establish the prevalence of undefined social origins and to what extent the socio-economic characteristics of those with undefined social origins are different from those who can be identified using the SOC Classification. The results show that 10.5% of the working age population have undefined social origins and that the labour market outcomes of these people are on average much worse than those with defined social origins. Results show that omitting these respondents underestimates the range of the social origin pay gap and the number of people affected. This highlights that there is a further effect of parental association in the labour

market and additional consequences of not clearly belonging to a household; both of which profoundly affects the life outcomes of a substantial share of the working age population.

Chapter 3 uses the UKHLS to further examine the social origin pay gap and item non-response for social origin in relation to the pay gap. When examining the pay gap cross-sectionally, we find that those from routine and undefined social origins experience a significant pay gap compared to those from upper-class origins. Following the dominance approach, we observe a significant pay gap for those with undefined social origins in eight of the nine waves, a significant pay gap for those from NS-SEC 5 and NS-SEC 6 origins in seven waves, and a significant pay gap for those from NS-SEC 4 origins in four waves. The pay gap is largest for those with undefined social origins in seven of the nine waves. When we examine the pay gap longitudinally, we find the pay gap is largest for those with undefined social origins, at 11.7%, followed by those from NS-SEC 7 origins at 11.2%. When we use total parental occupation as a proxy for social origin, we observe that the pay gap is generally larger for those from 'lower' social origins, particularly respondents whose parent(s) were economically inactive. This result supplements the findings from Chapter 2 in that individuals with undefined social origins report a larger pay gap compared to those with defined social origins. We observe similar results when we use parental education, total parental education, and highest parental occupation and highest parental education as proxies for social origin in that the pay gap is larger for respondents from 'lower' social origins. The results indicate the social origin pay gap may be larger when we consider both parents' occupation and/or education.

Lastly, Chapter 4 uses a range of proxies for cultural capital and social capital in the UKHLS to examine how these impact social origin wage gaps. We observe significant differences in cultural engagement and social capital in relation to respondents' social origin. In terms of pay gaps, when we examine the pay gap longitudinally using eight waves of data, we observe significant pay gaps for all social origin groups, except those from NS-SEC 2 origins, after controlling for cultural capital, educational attainment, and a rage of labour market observables. The pay gap is largest for those with undefined social origins at 8.9%, followed by those from NS-SEC 4 origins at 8.7%. This indicates that cultural capital does not fully explain the social origin pay gap and thus we consider other factors that can explain the wage differences amongst equally qualified individuals; therefore, we account for respondents' social networks. When we control for social capital, educational attainment, and respondents' labour market features, we observe that the pay gap is significant at the 1%

level for those from undefined and NS-SEC 4 to NS-SEC 7 origins and is significant at the 10% level for those from NS-SEC 3 origins. The pay gap is largest for respondents from NS-SEC 4 origins, at 8.3%, and is second largest for those with undefined social origins at 7.9%. This indicates that part of the wage disadvantage experienced by individuals from undefined and NS-SEC 4 to NS-SEC 7 origins is likely to represent the impact of unequal access to social capital. Overall, the results indicate social capital plays a role in explaining the social origin pay gap.

Overall, the results of this thesis highlight a clear social origin pay gap in the UK labour market, prevalent in the UK's largest employment survey and the largest UK's household panel survey. This thesis contributes to the social origin pay gap literature in three ways: it examines the pay gaps for all survey respondents in the LFS and the UKHLS, including those who have undefined social origins and highlights that omitting respondents with undefined social origins underestimates the magnitude of the social origin pay gap and the number of individuals affected. This thesis also considers respondents parents' occupational status and education to provide a more comprehensive proxy for respondents' social origin in estimating class wage gaps. Lastly, it uses a range of proxies for cultural capital and social capital to empirically examine to what extent these forms of capital play a role in explaining the social origin pay gap, the first study of its kind to do so. The results highlight significant pay gaps for those from routine and undefined social origins and thus reinforce the urgency to address socio-economic inequalities in the UK labour market.

Chapter 1   Literature Review

1.1 Research background

Firstly, this thesis addresses its research question by providing a critical literature review on the empirical evidence on the social origin pay gap and its determinants. A better understanding of the determinants of the social origin pay gap and the mechanisms through which they arise is needed to identify policies that will successfully reduce socio-economic inequalities in the UK labour market. This chapter proceeds as follows: section 1 introduces the returns to education literature before discussing the concept of social origin and demonstrating how this can affect individuals' labour market outcomes. Section 2 provides a critical review of the social origin pay gap literature and section 3 discusses the explained and unexplained determinants of the pay gap. Section 4 outlines what is known and unknown about the social origin pay gap. Lastly, section 5 provides a succinct summary of the chapter.

Education, and in particular higher education, is widely regarded as the great 'social leveller' in addressing socio-economic inequalities. Traditionally, education is believed to be the preeminent factor in determining individuals' labour market success (Blau and Duncan, 1967; Treiman, 1970). Individuals can acquire human and social capital through their education, independent of their social class background, and thus can acquire the resources needed to overcome any initial disadvantage they face (Torche, 2011). Research in both economics and sociology generally supports this rationale (Karlson, 2019).

The positive association between education and earnings at the individual level is one of the most accepted facts in economic literature (Checchi, 2006). The debate around the extent to which education can drive social mobility largely focuses on higher education and is based on the evidence that education is associated with a positive and high wage premium (Montenegro and Patrinos, 2014; Oreopoulos and Petronijevic, 2013; Psacharopoulos and Patrinos, 2018; Walker and Zhu, 2008). However, empirical evidence has also shown that there are varying levels of returns to a university degree. Wage returns of a university degree have been shown to vary by institution type (Coelho and Liu, 2015; Friedman and Laurison, 2019; Wakeling and Savage, 2015) and degree subject (Britton et al., 2022; Bratti et al., 2008; Chevalier, 2011; Walker and Zhu, 2011). In more recent times evidence has also revealed that there are varying returns to higher education for those from different social class backgrounds (Britton et al., 2019; Crawford and Vignoles, 2014; Friedman and Laurison, 2019; Hällsten, 2013; Laurison and Friedman, 2016; Mastekaasa, 2011). More

specifically, evidence reveals individuals from upper-class origins receive higher returns for their degree (Crawford and Vignoles, 2014).

The term 'social origin' refers to the position of an individual at a particular point in their adolescence and can be used as a metric when comparing individuals across the population. The terms social origin, social class, and class origin are often used interchangeably. Social origin is widely used as an empirical way of capturing individuals' class origins and is used across several disciplines, often measured in different ways. When studying inequality economists generally focus on the distribution of individual earnings or household income (Becker and Tomes, 1986). When studying intergenerational effects, economists typically use household or parental income as proxies for class origin. Whereas sociologists (Erikson and Goldthorpe, 1992) argue that individuals are fixed into a social hierarchy of relations based on their occupation, and from this categorise people into larger social groups. As a result, sociologists largely use parental occupation as a proxy for social origin. In recent decades there has been considerable overlap in these approaches with economists extending their scope to more group-based inequality and sociologists focusing on income and wealth inequality (Albertini et al., 2020). There has been considerable debate over what is the best proxy for measuring social origin (Blanden et al., 2004; Bukodi et al., 2015). In the UK, the most widely used method, and one that is used by the UK government, is the National Statistics Socio-economic Classification (NS-SEC) which uses the occupational status of the previous generation to proxy for an individual's social origin. NS-SEC categorises occupations into larger and broader occupational classes. Occupations are categorised based on their employment relations and conditions (Goldthorpe, 1980).

Individuals' social class origins are widely acknowledged as a determining factor on their educational attainment and labour market success (Bukodi and Goldthorpe, 2011; Halsey et al., 1980; Jencks et al., 1972; Sewell et al., 1976) - the latter of which is generally measured as occupational status and wages. Some children have an advantage from birth because they are born into families with more wealth, greater ability, and a greater focus on childhood learning as well as other favourable genetic and cultural traits (Becker and Tomes, 1986). Studies have found a clear association between social origin and occupational status in the UK (Crawford et al., 2016; Jackson et al., 2005), Europe (Mastekaasa, 2011) and the US (Blau and Duncan, 1967; Featherman and Hauser, 1978; Long and Ferrie, 2013). Thus, the ability for education to act as the driver for social mobility is challenged if there remains a

link between individuals' social origin and their labour market outcomes when accounting for their educational attainment (Crawford and Vignoles, 2014).

Despite the above evidence, social class is often overlooked or even ignored in public debates around diversity (Scully and Blake-Beard, 2006) and has been described as 'the elephant in the room' when discussing diversity (Reay, 2016). Research on labour market discrimination in economics to date has largely focused on race and gender. Only in recent years has it considered how social origin is another characteristic which can explain wage differences among equally skilled workers (Crawford and Vignoles, 2014; Gregg et al., 2019). Unlike other forms of social stratification such as sex, age, and ethnicity, social class is difficult to define as it does not reflect a discernible attribute (Stevenson and Lang, 2010). Thus, there is no UK legislation to regulate against it (Randle et al., 2015). Likewise, social class is not a shielded status under US employment law (Rivera and Tilcsik, 2016). As employment law does not deem social class a protected status, employers have meagre levels of motivation, socially or legally, to gather information on job applicants' and employees' social class backgrounds (Rivera and Tilcsik, 2016). The lack of such incentives results in a general absence of information on the social class backgrounds of those employed in the labour market, meaning that it is difficult to measure the true extent of social class inequalities in the labour market.

1.2 Social origin pay gap literature

1.2.1 UK evidence on the social origin pay gap

This section provides a critical review of the empirical evidence on the social origin pay gap. A review of the main studies on the social origin pay gap is provided below in Table 1.1. As this thesis focuses on the social origin pay gap in the UK labour market, this chapter firstly provides an overview of the main studies using UK data before discussing the international evidence.

Table 1.1: Summary of the main studies on social origin pay gap in the UK

Title	Author(s)	Journal	Research question	Methodology	Data	Findings
Heterogeneity in graduate earnings by socioeconomic background	Crawford & Vignoles	IFS Working Paper	If we were to compare two individuals who went to the same university, studied the same subject and achieved the same degree classification, but who came from different SEB or attended different schools, would there be any differences in their earnings?	Richly specified OLS regression models including higher education institution of study and subject fixed effects, to estimate how graduates' earnings vary amongst similarly qualified individuals	Cohort of graduates who completed their first degree at UG level in a UK institution in 06-07 (N=~75,000) and (N=~35,000) 3.5 years after graduation.	Those who attended private schools earn around 7% more per year, on average, than state school students some 3.5 years after graduation and 6% within the same occupations.
Does Higher Education Level the Playing Field? Socio-Economic differences in graduate earnings	Crawford & van der Erve	Education Sciences	Same question as above paper	Richly specified regression models. An OLS regression model of the relationship between various students' characteristics in graduates' earnings.	British Cohort Study April 1970, followed up to 2012 (N=511)	1 – Significant differences between the earnings of graduates from lower and higher social origins, even after accounting for a rich array of characteristics. 2 - Graduates whose mother has at least A-level (or equivalent) qualifications earn, on average, 7.6% more at age 26 than graduates whose mother has lower education qualifications.
Is improving access to university enough? Socio-economic gaps in the earnings of English graduates	Britton, Dearden, Shepheards & Vignoles	Oxford Bulletin of Economics and Statistics	Do students from poorer backgrounds achieve the same earnings gains compared to their similarly qualified counterparts who come from more richer families.	Quantile, Probit & OLS	Anonymized individual level-administrative taxable earnings data supplied by HMRC, linked to information on students' higher education from the English Student Loan Company.	We find that graduates from higher income families (with median income of around 77,000) have average earnings which are 20% higher than those from lower income families (with median income of around £26,000). Once we condition on institution and subject choices, this premium roughly halves, to around 10%.

The Class Pay Gap in Britain's higher professional and managerial occupations	Laurison & Friedman	American Sociological Review	Do the mobile attain the same levels of earnings as those from more privileged backgrounds?	Nested Linear Regressions	Labour Force Survey (July-Sept 14). Respondents aged 23-69, (N=43,444)	1 - Traditional professions dominated by children of managerial and professional origins, more technical occupations recruit more widely. 2 - Those from non-managerial and non-professional origins face a class ceiling in terms of earnings in professions.
Social mobility, the class pay gap and intergenerational worklessness: new insights from the LFS	Friedman, Laurison & Macmillan	Social Mobility Commission Report	Is there a social origin pay gap within the UK's top professions?	Two-Sample Two-Stage Least Squared approach. Use odds ratio to measure relative rates of mobility (N= 33,149)	Labour Force Survey	45% of earnings inequalities are passed across generations and those from working-class origins in the professions earn £6,800 less than colleagues from professional background. Once education, human capital etc. controlled for, £2,242 class pay gap.
Mind the gap: financial London and the regional class pay gap	Friedman & Laurison	The British Journal of Sociology	This paper provides a more spatially sensitive analysis that examines regional variation in the class pay gap.	Nested OLS regressions	Pooled data from the 2014 and 2015 Labour Force Survey (N = 7,534)	The 'class ceiling' is particularly marked in Central London, where those in high-status occupations who are from working-class backgrounds earn, on average, £10,660 less per year than those whose parents were in higher professional and managerial employment. The class pay gap is largest within Central London's banking and finance sector.

One of the key studies on the social origin pay gap examined the heterogeneity in UK graduate earnings by socio-economic background. Crawford and Vignoles (2014) utilised data from the Destinations of Leavers from Higher Education Longitudinal survey, a graduate follow up survey, working with a sample of around 24,000 UK graduates in 2006-07, three and a half years after graduation. The authors asked, if they were to compare two individuals who went to the same university, studied the same subject and achieved the same degree classification, but came from different socio-economic backgrounds or attended different types of schools, would there be any difference in their earnings? The authors found that those who had received private schooling earned, on average, around seven per cent more annually than their state school counterpart 3.5 years after graduation. Further findings showed an earnings difference of more than six per cent (equivalent to £1,500 per annum) between privately educated and state educated individuals within the same occupations. This has stark implications for the social origin pay gap as only seven per cent of the UK population attend private schools, the majority of which are overwhelmingly from upper-class backgrounds (Major and Machin, 2018), hence why private education is often used as a proxy for social origin. The above finding complements existing research which found that graduates from private schools were more likely to enter 'high-status' occupations (Macmillan et al., 2014), which are generally better remunerated. It also supplements existing evidence on the wage premium associated with private schooling (de Vires, 2014; Dolton and Vignoles, 2000; Green et al., 2012, 2017; Naylor et al., 2002) - which will be explored in more detail in the next section - and shows that even university education does not level economic returns in the labour market.

Similar results have been found in a cohort study. Crawford and van der Erve (2015) used data from the 1970 British Cohort Study (BCS), which tracks individuals born in a given week of April 1970 through their lives, up to and including the latest survey in 2012, when individuals were aged 42. Once restricting the sample to university graduates in work between the ages of 26 and 42, this provided the authors with a sample of 511. The authors then estimated the relationship between various student characteristics and earnings. One of the key benefits to using the BCS is that it is a longitudinal dataset which allowed the authors to explore whether the relationship between social origin and graduate earnings changes over time. Despite the restricted sample size, the authors used several vectors of controls to capture students' characteristics. These included individuals' socio-economic background, their individual and family characteristics, such as sex, ethnicity, and parental marital status, human capital indicators, such as attainment at school and university, cognitive and non-

cognitive skills in early childhood, and measurements of post-university experiences. Even once accounting for skills and experiences prior to and after university, the authors still found significant discrepancies between the earnings of graduates from upper-class and working-class origins. Overall, these findings suggest that coming from a 'higher' social origin, whether it be measured in terms of occupational status, education and/or income, were all significantly correlated with graduate earnings at age 26. Such findings suggest that there may be a range of channels through which originating from an affluent background can lead to labour market advantages. Whilst this study did exploit rich individual level data, its sample size was limited and quite selective as it focused only on graduates between the ages of 26 and 42, and therefore may give rise to biases. Therefore, this study did not focus on individuals working in the same occupations or provide insight into how the relationship between social origin and earnings varies by subgroup. The authors recommended that administrative data would be a more useful tool to investigate this relationship in more detail.

Other studies have examined whether students from poorer origins achieve the same earnings gains compared to their similarly qualified counterparts from more affluent backgrounds. Britton et al. (2019) used high quality administrative data linking anonymised tax, student loan, and Higher Education Statistics Agency data of a cohort of 166,000 English graduates up to more than a decade after graduation. This study addressed a gap in the literature as it focused on the earnings of university graduates up to 10 years after graduation, whereas most previous studies focused on only labour market entry. The data source provided the authors with the chance to examine graduates' earnings long after graduation and to assess what factors may influence growth in earnings. The earnings measurement used by the authors included profits from self-employment and partnerships, therefore, the earnings reported do not exclusively relate to employees. The cohort's earnings were examined over several years, focusing on earnings data from the tax years 2008/09 through to 2013/14. When using parental income, the authors found that students from higher income families (median income of around £77,000) had median earnings which are around 21% greater than those from less wealthy backgrounds (median income of around £26,000). Correspondingly, the figure was 16% for women. Although it is important to note the data did not include a direct measure of parental income but instead used a binary measurement of greater than or less than £77,000. These estimates approximately halved once controlling for a range of demographics, university attended, and degree subject. The authors suggested that the wage difference increased with age, and implied that previous research on socio-economic earnings (Crawford et al., 2016) may have underestimated the earnings gaps. Not

only has academic research uncovered a social origin pay gap, but similar results have been found from government research.

As part of research conducted by the Social Mobility Commission, Friedman et al. (2017) analysed a sample of almost 65,000 individuals from Britain's largest employment survey, the LFS. The authors found strong signs of class reproduction in the nationally representative dataset with 73% of doctors coming from professional and managerial origins and only six per cent coming from working-class backgrounds. This was not the case across all professional occupations though as engineering, IT, and many public sector professions were more socially inclusive. However, the authors did find that individuals from upper-class origins do have higher chances of obtaining a professional or managerial job. They found the odds of those from professional origins ending up in professional jobs is 2.5 times higher than those from less affluent origins. This is an important finding to highlight, as on average, these 'top jobs' offer higher salaries. When examining the pay levels of individuals in professional and managerial occupations, the authors found those from working-class origins earn, on average, £6,800 less than their colleagues from upper class backgrounds within these types of jobs. The pay gap was partly explained by differences in education and occupational status. However, when comparing workers with the same education, occupation, and experience, a class pay gap remained, although a class pay gap was not found in all occupations. For instance, there was no evidence of a class pay gap within nursing, social work, and life science. The reasons behind this will be explored in section 1.3. Nonetheless, this finding highlights a significant pay gap among equally qualified individuals from different social class backgrounds working in the same occupations. Some of the reasons for such pay discrepancies were highlighted in Friedman and Laurison's (2019) book 'The Class Ceiling'.

Unlike previous studies in this field, Friedman and Laurison's (2019) research used a mixed methods approach which consolidated secondary data analysis of the LFS with qualitative case studies of four 'elite' occupations - an accountancy firm, an architectural practice, a national television broadcaster, and self-employed actors. The case studies were comprised of 175 in-depth semi-structured interviews as well as conducting participation observation within these 'elite' workplaces. In combination with the primary data, the authors analysed data from the LFS from July 2013 to July 2016. This provided the authors with a sample of 18,000 workers in 'elite' occupations. Once restricting the sample to respondents who provided information on all relevant variables, the sample size reduced to 8,325. The authors

placed a strong focus on occupations like 'higher professional and managerial occupations' (e.g., chief executive officer, professor, doctor, lawyer etc.) and more "creative" occupations such as acting, film, and television. The latter of these occupations are not strictly 'elite' but were chosen by the authors due to their desirability, competitiveness, and social influence, as well as previous research highlighting how individuals' social class background can affect their careers within such professions. The authors argued that focusing on "big classes" - thinking of professional and managerial occupations as homogenous and not considering the variation of class inequalities within different professional and managerial jobs - when studying social mobility made it difficult to identify which elite occupations were most open or most closed to those from working-class origins. This proved to be a valuable contribution to the social mobility debate as when analysing the social composition of these elite occupations, the authors found that many were socially exclusive as they were dominated by individuals from upper class origins.

With regards to pay, the authors found that individuals from working-class origins earn on average £6,400 less (equivalent to 16 per cent) per annum in professional and managerial occupations than their colleagues from upper class origins. After controlling for respondents' demographics, educational attainment, human capital factors, and work context - such as hours worked, job related training, job tenure, and location of work - the pay gap reduced to £2,242 and remained unexplained. In line with Friedman et al.'s (2017) findings, the pay gap was found to be particularly prominent within the more 'traditional' professions such as law, medicine, accountancy, and finance. However, a pay gap was not present across all elite occupations as it was almost non-existent in more 'technical' fields, such as architecture and engineering. The authors have received some criticism (McCrory Calarco, 2020) over reporting no class pay gap in film and television in their secondary data analysis of the LFS, but later reported a stark class ceiling in their qualitative case study of a national television broadcaster. However, it was through the qualitative approach that the authors were able to go beyond the data and explore the causes of the pay gaps within the workplace. Through their participation observation and interviews, the authors found that the resources and personal traits individuals inherit from their class origin can significantly influence their chances of gaining access to a professional job, as well as their ability to establish 'fit' and progress within such jobs. Some examples include the level of wealth an individual inherits and can extend to their speech, accent, mannerisms, and linguistics. Hence, this study highlights that individuals' 'merit' does not sufficiently explain socio-economic inequalities within elite professions (McCrory Calarco, 2020).

The Great British Class Survey (GBCS) was a UK web survey hosted by BBC's Lab UK website which ran from January 2011 to July 2013. In total, the survey yielded 325,000 responses, making it the largest dataset in the world that focuses specifically on social class. This large sample provided researchers with the ability to explore the social composition and wages of individuals in several occupations, including acting which has previously been hard to obtain the data on but one in which social class plays a key role in. In exploring how social origin and family resources shape and influence the career trajectory of actors, Friedman et al., (2017) utilised a sample of over 402 self-identified actors in the GBCS and supplemented this with 47 qualitative interviews. Firstly, the authors found that actors are disproportionately drawn from upper-class origins, with 73% of actors in the GBCS and 51% in the LFS coming from professional and managerial backgrounds; a finding similar to Friedman and Laurison (2019). The authors also found that the economic, social, and cultural resources possessed by actors were all higher among those from upper class origins. In terms of pay, the authors found that actors from professional and managerial origins have incomes on average over £11,000 greater than actors from intermediate and working-class origins. However, the GBCS has received some criticism. Firstly, the survey was under-representative of all types of manual workers and the response rates varied considerably across UK regions (Friedman et al., 2017; Savage et al., 2015). The GBCS was also a self-selected survey and one that was disproportionately completed by the economically successful (Savage et al., 2013). Despite such criticisms, this finding highlights a significant pay gap within the acting profession and mirrors similar results that have been found in other professional occupations.

One general limitation of the above studies is that almost all of them use cross-sectional data; the BCS is a longitudinal dataset but provides a fairly small sample and is subject to cohort effects. Therefore, these studies can generally only provide a snapshot of individuals' earnings at a point in time and are limited in informing us as to whether the social origin pay gap has increased or decreased over time. However, international studies in the US, Norway, and Sweden have used longitudinal datasets to examine the social origin pay gap, the results of which are discussed next.

1.2.2 International research on the social origin pay gap

The above section has reviewed the main studies on the social origin pay gap in the UK. However, empirical evidence has also uncovered class-based wage penalties in many other

high-income countries. This section reviews the international evidence on the social origin pay gap.

Hällsten (2013) exploited a dataset composed of population records organised on behalf of the Swedish Institute for Social Research. This dataset combined high quality information data with a match between employers/companies and their employees, focusing on those aged 30 and older. This data set allowed for the examination of individuals' pay levels several years after entering the labour market and was measured across three periods: 2001, 2004, and 2007. The author found that individuals from upper-class origins earned four to five per cent more than individuals from less affluent origins despite holding the same levels of education. The pay gap was found to vary across labour market segments. Whist this study did use a valuable fine-grained measure of education, such as levels and fields of study, it lacked other important measurements such as human capital variables which would have provided a more informed understanding on the pay variation. Nonetheless similar results have been found in Norway (Mastekaasa, 2011) and the US.

When exploiting the longest running longitudinal household survey in the world, the Panel Study of Income Dynamics (PSID) - the US equivalent to the UKHLS – Bartik and Hersbein (2016) found that the increase in lifetime earnings from having a bachelor's degree, relative to high school education, is far greater for those who come from affluent origins in comparison to those who grew up in impoverished conditions. For example, college graduates from families with incomes above the federal poverty level earn 162% more over their careers than those from the same income group who hold a high school level of education. Conversely, the wage premium for those below the federal poverty line was 91%. This highlights that the returns to education are also greater in the US for those from more affluent origins than those from lower-income backgrounds even amongst degree holders.

Moreover, similar results have been found in other US datasets. In utilising two nationally representative samples of college graduates, the Baccalaureate & Beyond Longitudinal Study of 1993 and 2008, Witteveen and Attwell (2017) found that graduates from working-class origins and lower middle-class origins earned significantly less than graduates from upper-class origins with similar levels of education who work in the same occupation/industry area, 10 years after graduation. Working with these datasets provided the authors with a sample of 7,640, far greater than the sample in Crawford and van der Erve's (2015) study on UK graduates. The datasets exploited by the authors offered

extremely rich individual level data on the type of institution attended, their college major, college performance, their occupational status, and earnings. Even after controlling for the college institution, degree subject, and classification, there was still considerable income discrepancies between graduates from different social origins. This finding once again highlights the 'long shadow' of class origin and how social class can affect labour market outcomes a decade after graduating. The results indicate that a college degree does not equalise rewards in the US labour market. Furthermore, comparable results have been found in other developed nations.

In collaboration with other researchers on comparative work, Friedman and Laurison (2019) found that although the UK has the largest class pay gap, a similar effect is found in both France and Australia. In France the average earnings of those from professional and managerial backgrounds in similar top jobs was almost €5,000 (equivalent to 14 per cent) greater than those from working class origins. The authors found the pay gap was much smaller in Australia, around eight per cent, but still statistically significant. The same authors have released a work-in-progress paper on the pay gap within professional and managerial occupations in the US. The results show that when individuals from working-class origins are upwardly mobile into high-status occupations, they earn, on average, around $25,000 per year less, than their upper-class counterparts. The pay gap is partly explained by the upwardly mobile being less likely to have college degrees but remains substantial after controlling for several important predictors of earnings.

In summary, the above evidence highlights the existence of a social origin pay gap in many high-income countries. This highlights that individuals from working class origins earn less than their upper-class counterparts, despite holding the same levels of education and working in the same occupations. This indicates that social origin has an enduring influence on the level of rewards an individual receives in the labour market. The evidence suggests this operates in two ways; it highlights the benefits of coming from an upper-class background whilst also suggesting there is a disadvantage associated with stemming from a working-class background. In broader terms, evidence on the social origin pay gap highlights that policymakers interested in equal pay must focus on the wide range of attributes that are valued in the labour market, specifically those that are class related. The attributes and factors that explain the wage gap are discussed next.

1.3 What explains the social origin pay gap?

Empirical evidence shows there are many determinants that explain the social origin pay gap. This section provides a synthesis of such factors. Firstly, it reviews the explained drivers of the pay gap, such as, education, occupational status, and work context. Following on from this, some of the unexplained factors appearing to drive the pay gap are explored, drawing upon theoretical perspectives from economics and sociology.

1.3.1 Educational attainment

Empirical evidence shows that educational attainment plays a significant, if not the greatest role in explaining the social origin pay gap. In Sweden, Hällsten (2013) found when using highly detailed measures of education that combined levels and fields of study, in relative terms the class origin pay gap reduced by 30 per cent. Similar results have been found in the UK. Friedman and Laurison (2019) found that the raw pay gap of £6,400 per annum was reduced by almost half once accounting for individuals' educational attainment. In addition, Hermannsson (2018) used a pooled sample of cross-sectional data from three waves of the LFS from 2014-2016 and found that once controlling for educational attainment, the wage premium for those from upper class origins reduced considerably. For example, the wage premia for those from upper class origins reduced by 53% when compared to the wages of those from working-class origins, but only 5% for those from NS-SEC 4 (self-employed) origins. Other empirical evidence complements these findings (Friedman et al., 2017).

Although most studies on class wage penalties have examined the wages of individuals holding similar levels of education, a range of evidence indicates that 'prestige' education does partially explain the social origin pay gap. For instance, evidence highlights a wage premium for individuals who attended private schooling and/or graduated from an 'elite' university.

1.3.1.1 Prestige education

Empirical evidence highlights a private school wage premium in the labour market. Although private education is often associated with a high wage premium, it is a costly investment to undertake. The ability to attend private schooling is ultimately a question of family monetary resources (Green et al., 2012). The average annual cost in the UK for private schooling is £20,480 and £34,790 for boarding school (Loydon, 2023). These figures highlight the significant costs involved in acquiring a private education, which exclude the

majority of children in the UK from gaining access to this form of education. This has implications for the social origin pay gap as, on average, individuals who attend a private school later go on to obtain higher levels of educational attainment, are more likely to work in professional jobs, and have higher wages (Dearden et al., 2002; Sullivan et al., 2014).

For instance, Dolton and Vignoles (2000) examined the wage effect of attending private school using the 1980 National Survey of Graduates and Diplomates, a one in six random sample postal survey of UK. The authors found a private school wage premium of around seven per cent for men, but an insignificant effect for women. This result remained unchanged even after accounting for degree subject, institution, and degree classification. Other studies have found similar results. Naylor et al. (2002) studied the occupational earnings of UK university graduates, using the First Destination Survey (FDS) of all graduates six months after leaving a pre-1992 university. The analysis was based on a unique dataset that matched 315 administrative records of a full cohort of students with information from the Department for Education and Employment and from a variety of independent school sources on the aspects of their schooling prior to university. The authors analysed the individual records of students leaving a UK university in 1993 and found a three per cent wage premium for graduates who attended private school. The authors also found the extent of the wage premium increased with the level of fees charged by the school, suggesting the more expensive the school an individual attends the higher the wage premium. Both studies highlight the long-standing presence of a private school wage premium and that the benefits associated with a private education may overwrite an individual's achievements at university. Although these two studies are quite dated, similar results have been found using more recent datasets.

Anders (2015) examined the pay growth of graduates from a 2008/09 cohort six months and 3.5 years after graduation. The author used a linked dataset comprised of Higher Education Statistics Agency (HESA) administrative data, along with survey data from HESA's Destinations of Leavers of Higher Education (conducted six months after graduation) and its follow up the Longitudinal Destinations of Leavers of Higher Education surveys (conducted three years later). Anders found no evidence of a pay growth discrepancy by parents' occupational positioning but did find quicker pay growth among those who had received private schooling. For instance, 3.5 years after graduation, those who attended a state school had a mean annual salary of £31,586, whereas those who attended a private school had a mean annual salary of £36,036. This suggests that the wage premium associated

with private schooling increases over time. In addition, de Vires (2014) found that graduates who attended private secondary schools started on salaries on average £1,350 higher than their state school peers. These studies only examined the wages of graduates six months and 3.5 years after graduation; thus, their timeframe is fairly limited to confidently assert whether the private school wage premium associated endures over time. However, comparable results have been found when using more extended longitudinal datasets.

Green et al. (2012) compared the earnings for a cohort born in 1958 (using the National Child Development Study - NCDS) to those of a cohort born in 1970 (using the British Cohort Study - BCS). The NCDS follows the lives of 17,415 people born in England, Scotland, and Wales in a single week in 1958. Likewise, the BCS follows a similar number of people born in a single week in 1970, as outlined in section two. This study found that earnings attainment has improved at a quicker rate for privately educated individuals in comparison to those who attended state school, indicating that the private school wage premium is long-standing and has increased over time. However, the authors were unable to control for university institution attended and degree subject which would have provided a more granular analysis of individuals' education and a more informed result on how higher education performance affects wages.

Overall, the above evidence suggests that attending private schooling is correlated with higher earnings in the labour market, even once accounting for educational attainment and university education. This therefore begs the question as to why private schooling confers such an advantage in the labour market? One possible explanation for these results is that it may reflect unobservable characteristics that cannot be captured in secondary data. Thus, the results may indicate two things. Firstly, more affluent families value education more and these results may reflect greater levels of parental investment. Research on intergenerational transmission effects assumes utility-maximizing parents who are laboriously concerned about their children's future (Becker and Tomes, 1986). When considering investment in an individual's human capital, it is important to note that a sizable volume of our human capital is chosen and funded by our parents. Such investments are geared towards producing a positive correlation between the earnings of parents and the earnings of their children, with high-income parents typically investing more, contributing to the perpetuation of income inequality. Therefore, it is appropriate to think of human capital investments in an intergenerational context. Secondly, it may suggest that private schools inculcate better non-

cognitive and soft skills in children that are later rewarded in the labour market. Research on this is inconclusive.

On the other hand, it may also indicate that private schooling is viewed as a proxy for some unobservable characteristics that are positively associated with earnings. Such characteristics may include things like social skills, ability, confidence, and determination, or it may operate in the form of favouritism or unconscious bias. The ambiguity with these 'skills' is that they are difficult to measure and capture in administrative data and national surveys, hence why they have not been accounted for in some previous studies (e.g., Crawford and Vignoles, 2014). Nonetheless, the above highlights how one factor in individuals' upbringing, such as their parents' ability to pay for private education, can have a positive bearing on their future labour market earnings, over and above their performance at school and even university. Having the monetary resources to fund private schooling is not related to an individual's ability or talent but is only a privilege afforded to those from the most affluent backgrounds.

However, not all the above studies were able to control for university institution attended and degree subject (e.g., Bukodi and Goldthorpe, 2011; Green et al., 2012). The university one graduates from, the subject studied, and degree classification have all been shown to yield varying financial rewards in the labour market (O'Leary and Sloane, 2008). Thus, the inclusion of a review of this literature will provide a better understanding of the determinants of the class pay gap and whether university institution and degree subject play a role in explaining class-based wage differences.

1.3.1.2 University institution

The Further and Higher Education Act (FEHA) 1992 facilitated the reorganisation of the higher education sector in the UK. This act brought former polytechnics and Colleges of Technology into the university sector. This change in legislation created more opportunities in terms of access to higher education for all, particularly those from working-class origins. University institutions in the UK are often split into three categories: Russell Group universities, post-92 universities, and pre-92 universities. The Russell Group is comprised of 24 leading research-intensive universities and has several institutions that are ranked in the top 100 in the world (Russell Group, 2023). Pre-92 universities refers to universities that existed before the FEHA and post-92 refers to universities that were awarded university status after the FEHA.

With the expansion of higher education and the subsequent increasing number of degree holders, obtaining a common or 'ordinary' university degree is no longer sufficient in ensuring a high wage return. Other factors such as what university an individual graduated from, what subject they studied, and their degree classification, can all affect their level of earnings in an increasingly competitive labour market. This bears relevance for the social origin pay gap as individuals' access to information on higher education (Smyth, 2022), their decision to attend university (Findlay and Hermannsson, 2019), the subject they choose to study (Breen and Jonsson, 2000; Lucas, 1999, 2001; van de Werfhorst and Luijkx, 2010), which university to attend, and their performance at university can be all affected by their social class (Reay, 2013).

It has been well established that in the UK individuals from working-class origins are far less likely to attend university, let alone to attend an elite one (Britton et al., 2019; Crawford et al., 2016). Applicants from upper-class origins disproportionately apply to the most esteemed tier of universities, such as the Russell Group, and have a higher chance of acceptance over their working-class counterparts with the same level of educational attainment (Zimdars, 2007). Likewise, those who attended private school have a greater chance of gaining admission to an elite university than those who attended state schooling with the same level of schooling qualifications (Sullivan et al., 2014). Consequently, elite universities are inordinately populated by students from upper-class origins (Harris, 2010). This is important to note as a wide range of literature shows that Russell Group graduates are markedly more likely to go on to obtain a higher professional and managerial occupation than graduates from other universities (Anders, 2015; Macmillan et al., 2014; Wakeling and Savage, 2015).

Research also highlights a wage premium for graduates of Russell Group universities. In their analysis of UK graduates' wages, Walker and Zhu (2013) exploited data from the British Household Panel Survey (BHPS), the precursor to the UKHLS, which followed almost 8,000 individuals over time. The authors found male graduates from pre-92 universities earn 12% more than graduates from post-92 universities. This wage premium increased by a further four per cent for Russell Group graduates when comparing them to post-92 universities male graduates. Similarly, the earnings for females who graduated from Russell Group and post-92 universities were 11 and seven per cent higher respectively when compared to post-92 university female graduates. Evidence also reveals heterogeneity in

wage returns amongst Russell Group graduates. For instance, Britton et al. (2022) found higher returns for those who attended an 'elite' Russell Group university – which the authors defined as the University of Oxford and Cambridge, the London School of Economics, and Imperial College London - compared to those who attended other Russell Group universities. This indicates the more 'elite' the university an individual attends the more of a positive impact this will have on their wages.

The above evidence highlights that individuals from upper-class origins are more likely to attend the most esteemed tiers of higher education that carry the greatest financial return. However, other aspects of higher education can also affect wages. As previously mentioned in the introduction, wage returns can vary not only by university institution attended but also by degree subject.

1.3.1.3 Degree subject

The field an individual studies at university has shown to affect their earnings. Subjects studied at university are rewarded varyingly in the labour market (Britton et al., 2008, 2022; de Vires, 2014). Medicine, economics, law, maths, and business have all been shown to derive substantial earning premiums in comparison to other degree subjects, such as arts and literature (Britton et al., 2022). It is important to note that, an individual's field to study can be influenced by their social class (Breen and Jonsson, 2000; Lucas, 1999, 2001; van de Werfhorst and Luijkx, 2010) and thus individuals from different social class backgrounds have varying odds of studying different subjects (Anders, 2015).

Not only has research shown that returns to degree subject can vary, but evidence has also shown that the returns to degree subject can vary by social origin. Hansen (2001) used data on 10 per cent of the Norwegian population between the ages of 30 and 41 in 1996 and found that the direct social origin effects on annual earnings vary by field studied at university. For instance, Hansen found that in 'hard' fields such as engineering and the natural sciences the earnings gap between those from the upper-class origins and working-class origins was below 10 per cent net of education controls. Conversely the social origin pay gap was for those in 'soft' fields such as the social sciences, economics, and law, around 25 per cent. The author suggested that in 'hard' fields performance is more objective, whereas performance in the 'soft' fields is more ambiguous. These differences in performance evaluation led Hansen to contend that they result in class-biased decision-making, ultimately favouring those from upper-class backgrounds.

Similar results have been found in Sweden. In using unique population-level matched employer-employee data on monthly wages, which distinguished different levels and fields of study, Hällsten (2013) found direct class origin effects were larger in 'soft' fields than in 'hard' fields of study. For instance, the effects of class origin on wages played a greater role for arts and humanities graduates, where the social origin pay gap is wider in comparison to the wages of graduates from the sciences. Hällsten also found that after using a fine-grained measurement of education, the direction class origin effects on wages were not fully explained. This led the author to suggest the performance evaluation criteria may have an influence on wages, indicating previous studies have downplayed the extent of employers' discrimination in the labour market. This finding complements Hansen's (2001) findings and may suggest that subjectiveness of performance evaluation in the workplace can play a role in direct class origin effects. However, not all research has concluded upon such pay gaps in relation to degree subject. Research has also found that degree subject only reduces the social class pay gaps amongst UK graduates by one to two per cent, suggesting it explains little in terms of earnings differences (Britton et al., 2019).

The above section highlights that when accounting for fine grained measures of educational attainment, such as schooling type, university attended, degree subject, and degree classification, the returns to education are higher for those from upper-class origins. This indicates that social origin plays an important role in the earnings of graduates over and above their educational attainment. This affect is not confined just to university graduates though, as social origin has also shown to affect the earnings of non-graduates (Hällsten, 2013). The next section considers some of the mechanisms that explain the social origin pay gap in the UK labour market.

1.3.1.4 Occupational status

One factor explaining the social origin pay gap is occupational status. Research suggests the labour market is more meritocratic for people with higher levels of education (Mastekassa, 2011), suggesting social origin effects are mediated by educational attainment (Hout, 1988). Whilst acquiring high levels of education is often perceived as imperative for social mobility to materialise, evidence suggests that education alone is unsatisfactory in levelling up the prospects for those from 'lower' social origins in securing the same level of rewards in high-status jobs (Boliver, 2011; Iannelli and Paterson, 2007). University graduates from upper-class backgrounds have higher chances of accessing elite occupations in comparison to their

graduate counterparts from less privileged social origins (Britton et al., 2019; Crawford et al., 2016; Duta and Iannelli, 2018; Jacob et al., 2015). Obtaining entry to a high-status occupation is the first step of an individual's career ladder. However, the odds of obtaining one are not the same for all individuals. Several studies have found that individuals from upper-class origins have significantly higher odds of obtaining a professional occupation in comparison to their working-class peers who hold the same level of education.

When examining three British birth cohort studies of children born in 1946, 1958, and 1970, Bukodi and Goldthorpe (2011) found no evidence of any increased education-related meritocratic access to salary occupations. The authors found that class origins do have a significant independent effect, as men of upper-class origins in the 1958 and 1970 cohort were advantaged over those from other social class backgrounds. Macmillan et al. (2014) found that 3.5 years following graduation, those with parents in a professional or managerial role are 4.7 percentage points more likely to secure a top occupation themselves. The authors also found that almost one third of graduates from upper-class origins secured a professional or managerial job compared to just over a quarter of those from lower middle-class and working-class origins. Research by the Social Mobility Commission (2021) highlights that those from upper-class origins are 60% more likely to get a professional job than those from working-class origins. Despite only one third of the sample coming from professional origins, in terms of occupational status, this group made up 73% of doctors, 66% of journalists, and 62% of lawyers (Friedman et al., 2017). Furthermore, Friedman and Laurison (2019) found that that individuals from professional and managerial origins were 3.6 times more likely to work in high-status jobs in comparison to those from working-class origins. The above evidence highlights that those from professional and managerial origins are significantly more likely to work in similar occupations to their parents.

In the more 'traditional', even 'gentlemanly' (Miles and Savage, 2012) professions, in the form of law and business, individuals from upper social origins are often over-represented. Friedman et al. (2017) found that the likelihood of individuals from professional origins obtaining professional employment is 2.5 times higher than the probability of those from less advantaged origins. Similarly, Friedman and Laurison (2019) found that if an individual's parents were doctors, they were 24 times more likely to become a doctor themselves, and if their parents were lawyers, they were 17 times more likely to become a lawyer. Research also shows that those from upper-class origins are more likely to progress within these jobs (Anders, 2015; Ashley et al., 2015; Friedman and Laurison, 2019).

Evidence suggests that when individuals from working-class backgrounds do secure a professional or managerial job, they are more like to 'settle' in lower paying professional and managerial jobs, such as IT and public sector management, as opposed to law and medicine.

The above evidence highlights that social origin is an influencing factor on individuals' occupational status, particularly in relation to securing a professional and managerial job. Research on the 'class ceiling' has largely focused on these 'top jobs' in the UK. In understanding the social origin pay gap, attention must be given to these specific types of jobs as they generally offer higher wages and are more socially exclusive. Not only do these jobs pay more but they are also associated with more symbolic and material rewards (Lareau and Weininger, 2003).

Overall, the above studies show that those from upper-class origins have higher chances of reaching the highest paid occupations. This is not to say that people from working-class origin do not enter the professions, nor do they earn high salaries. Of course, many of them do, however, when they do secure a professional job, they are less likely to work in the highest paying sector, firms, and departments, and are less likely to progress within these jobs. The next section of this literature review will explore the work related factors that partly explain the social origin pay gap.

1.3.2 Work context

1.3.2.1 Sector/industry

Work context, in terms of where one works, what sector they work in, and what size of firm they work at, have all shown to be determinants of the social origin pay gap. Although empirical evidence on how these factors explain wages is well established, in more recent times research has demonstrated that work sector also explains class wage penalties. For instance, Laurison and Friedman (2016) found that most of the pay gap was explained by work context such as the size of company an individual works at and their location of work.

With regards to work sector, on average wages are higher in the private sector than in the public sector in the UK (Office for National Statistics, 2022), with the wage growth increasing at a much faster rate in the private sector than in the public sector (Office for National Statistics, 2023). Research on the gender pay gap highlights how this can affect wage penalties as women are more likely to work in the public sector in comparison to men

(Bryson et al., 2020). Studies have shown that the level of bureaucracy within an organisation, in terms of its layers of formality in recruitment and promotion, plays a role in class origin effects in the workplace. Evidence suggests that class origin wage effects are smaller in the public sector. It has been shown that more formalised employment practices, required by discrimination law, are exercised to a greater extent not only in the public sector, but also in some cases in larger private organisations (Bridges and Villemez, 1994; Marsden et al., 1996). This has shown to be the case particularly in relation to the promotion process within more high-paying firms where the selection process is more subjective and contestable and has been shown to favour those from upper-class origins (Friedman and Laurison, 2019).

Although research to date on the social origin pay gap has largely focused on university graduates, evidence has exposed the existence of a generic social origin pay gap across various labour markets. In analysing data on Norwegian cohorts from 1955 to 1969, Mastekaasa (2011) found that direct social origin effects were relatively small for individuals employed in public sector and large private sector organisations. The author suggested this reflected more ascriptive and meritocratic processes which are supported by formal rules and bureaucracy. These results supplemented Mastekaasa's (2004) findings in that bureaucratic procedures act as a levelling mechanism, thus mitigating class bias within the hiring and promotion process. Similar results have also been found in Sweden. Hällsten (2013) used data from population records and found that direct class origin effects were unequivocally smaller in the public sector and marginally lower in small private companies. Hällsten (2013) also found that social origin pay gap was small for almost all industries in the public sector. As there are more regulated pay structures and progression in the public sector, this may indicate that an individual's class origin plays less of an influential role than it might in the private sector. Although the results vary in relation to private company size, both studies highlight that direct class origin effects are lower in the public sector. However, empirical evidence is not unanimous on this subject.

Research shows that the levels of bureaucracy in the public sector do not fully eliminate class wage penalties. For instance, Friedman and Laurison (2019) found the class wage gap was larger in the public sector than in the private sector. The authors found those from working-class origins working in the public sector reported average earnings of around £36,000 per annum, whereas those from professional and managerial origins reported earnings of almost £45,000 per annum. Likewise, the figures were around £43,000 and

£48,000 respectively for those working in the private sector, highlighting a smaller pay gap, but nonetheless a social origin pay gap in both the public and private sector. However, work sector is not the only work related factor which can explain class wage penalties. Other factors such as work location also play a role in explaining the social origin pay gap.

1.3.2.2 Work location

Friedman and Laurison (2019) found that the region where people work explained 23% of the social class pay gap. In their analysis of the LFS, the authors found those working in elite jobs in Central London earn on average £16,000 (or 36%) more than the average elsewhere in the UK. In using the same dataset, Friedman and Laurison (2017) found that those in higher professional and managerial occupations in Central London earn on average 44 per cent higher than those situated elsewhere in the UK. This has implications for the social origin pay gap as those who work in such jobs in London are disproportionately comprised of those from upper-class backgrounds. For instance, over 60% of those who work in Central London came from professional and managerial origins, whereas fewer than 15% stemmed from working-class origins. This highlights that those from more affluent origins are considerably more likely to work in the most remunerated locations. This is in part due to their ability to capitalise on opportunities in such areas, which is largely contingent upon their economic capital[1]. However, it is not their economic capital per se, but more so their parents' economic capital which they can utilise to take advantage of such opportunities. Qualitative research demonstrating how family resources plays a role in the labour market will be explored later in this chapter.

In their analysis of nine quarters of the LFS from July 2013 to September 2015, Friedman and Laurison (2017) found that the class pay gap was not evenly distributed and was particularly marked in the banking and finance sector in Central London; the highest paying sector located in the highest paying region. The authors found that those from working-class origins earn, on average, £10,660 less per year than those from higher professional and managerial origins in high-status occupations. While the authors did acknowledge the limited sample size, they found that the long-range upwardly mobile (measured as those from working class origins working in a professional or managerial job) earned, on average, a staggering £26,000 less annually than those from higher managerial and professional origins in banking and finance in Central London. This indicates that not only is the class

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[1] Economic capital refers to material assets that are 'immediately and directly convertible into money and may be institutionalized in the form of property rights' (Bourdieu 1986, p.g. 242).

pay gap highest in the most remunerated region, but it is most significant in the highest paying sector of the highest paying area. This led the authors to conclude that closer the proximity, geographically and occupationally, to Britain's most remunerated occupations, the more social origin appears to play an influential role.

However, the class pay gap is not just a London 'issue'. For instance, the above authors found pay differences across all areas in the UK (Friedman and Laurison, 2017). One study found that in half of the 16 UK regions analysed, those from working-class origins reported the lowest levels of earnings and those from professional and managerial origins reported the highest level (Friedman and Laurison, 2019). This suggests a class pay gap is present across many regions of the UK. Although, the authors found alarming pay gaps in Central London, they found almost no class pay gap in areas such as Manchester and the East of England.

Although more research on work location in relation to class wage penalties is needed, the existing evidence nonetheless highlights that work location plays a role in explaining the social origin pay gap. The above evidence also highlights that family resources plays a considerable role in socio-economic inequalities in the labour market. For those who are born into more affluent origins they can afford to take advantage of financially rewarding opportunities in the most remunerated areas through re-locating or through other avenues such as unpaid internships, which will be discussed later in this chapter.

1.3.2.3 Firm size

Firm size is perhaps the least researched determinant of the social origin pay gap, hence its smaller section in this literature review. This is possibly due to issues with data collection on the subject and that few administrative datasets and national surveys contain this type of data. Nonetheless, empirical evidence demonstrates that firm size plays a role in explaining the social origin pay gap. For instance, individuals from upper-class origins are more likely to be employed in larger firms, where wages are higher (Friedman and Laurison, 2019). On the other hand, evidence reveals the opposite for those from working-class origins. Even when working-class individuals do go on to obtain high levels of education, they are still less likely to work in larger firms and are more likely to be employed in smaller firms, where wages are lower. In their analysis of over 43,000 respondents of the LFS, Laurison and Friedman (2016) found that people working in firms with over 500 employees earn over 35% more than those in companies with 25 or fewer employees. Smaller firms are also, on

average, less productive, pay lower wages, and offer fewer fringe benefits (De Loecker et al., 2022). These levels of 'firm sorting' affect class wage penalties as 37% of those from higher professional and managerial origins worked in companies with over 500 employees, compared to only 27% of individuals from working-class origins (Laurison and Friedman, 2016). Larger firms are also more likely to be located within highly remunerated areas such as London, the implications of which have previously been discussed. Therefore, this shows how two forms of work context can reinforce one another and have a compound effect on individuals' earnings.

1.3.2.4 Departmental sorting and progression

The 'class ceiling' literature has not only exposed that individuals from working-class origins are less likely to go on and secure employment in the highest paying jobs, but they are also less likely to work in the highest paying departments and are less likely to occupy the highest paying positions. Social mobility literature generally focuses on professional and managerial occupations more broadly and in doing so its scope of analysis is limited to occupational entry (Friedman and Laurison, 2017; Laurison and Friedman, 2016). As such, social mobility literature often overlooks that whilst individuals from working-class backgrounds do go on to work in professional and managerial jobs, they do not enter with the same level of resources. Subsequently, they do not go on to obtain similar levels of earnings or success due to the differences in family and parental resources (Ashley et al., 2015; Friedman and Laurison, 2017; Hansen, 2001; Rivera, 2016).

One key strength from Friedman and Laurison's (2019) study is the authors' mixed methods approach that provided them with data at firm level through surveying employees. This in-depth data facilitated the examination of the social composition of employees in terms of pay, departmental work, and progression. This was a first for research on the class pay gap as this type of data is generally not included in national surveys or administrative data. The authors found a class ceiling in terms of pay and progression in three of the four case studies: accountancy, acting, and television. The architecture firm studied was the only firm which the authors concluded there was no class ceiling as over half of its Partners were not from professional and managerial origins. However, such claims by the authors are questionable. For example, none of the firm's associate partners, associates, and qualified architects came from working-class backgrounds. Overall, 74% of the firm's staff came from professional and managerial origins whilst only six per cent came from a working-class background. In her review of the Class Ceiling, McCrory Calarco (2020) criticized this claim by the authors

arguing that the class ceiling is more prominent for women and people of colour in the case study of the architecture firm, arguing a more intersectional discussion of class, sex, and race was needed.

In terms of those who occupy the highest-paying positions within these firms, the authors found greater levels of social exclusion the further one climbs an organisation's ladder. The television broadcaster studied was structured on six pay grades from assistant to executive/head of department. The average pay for these positions was around £20,000 and over £100,000 per annum respectively. The class differences of the individuals within these varying positions were striking. Whilst about 60% of assistants came from upper-class origins, this figure was over 80% for those in executive/head of department positions. On the other hand, only 2.5% of those in the highest paying positions came from working-class origins. Furthermore, 90% of senior commissioners came from professional and managerial backgrounds, whilst none came from working-class origins. It is within such roles that perceptions of an individual's appearance as 'polished' are preeminent. Forms of embodied cultural capital, such as mannerisms, speech, linguistics, and accent are essential to one's image in bolstering their ability to persuade a client of their expertise. Literature shows how these forms of embodied cultural capital play a role in progression within the workplace. As part of research conducted by the Social Mobility and Child Poverty Commission, Ashley et al. (2015) found that those from working-class origins experienced obstructions in accessing the most remunerated 'front-office' roles in elite law and accountancy firms due to not displaying the 'right' forms of embodied cultural capital. An extensive body of literature shows that there are also a range of cultural factors in the hiring and recruitment process which favour certain traits and extra-curricular activities which are firmly associated with upper-class culture (Ashley and Empson, 2017; Blackmore et al., 2017; Breen and Goldthorpe, 2001; Jackson et al., 2005; Jacobs, 2003; Rivera, 2012).

The above evidence highlights that those from upper-class origins are more likely to have 'prestige' education, more likely to work in professional and managerial occupations, and are more likely to work in the most financially rewarding firms, locations, and departments. A range of qualitative literature reveals the processes through which these inequalities arise and are perpetuated, which is discussed next.

1.4 Unexplained drivers of the class pay gap

This section of the literature review considers various theoretical perspectives that can offer explanations of the unexplained social origin pay gap.

1.4.1 Discrimination - taste and statistical

The empirical measure of discrimination, based on the Oaxaca-Blinder decomposition, measures the wage gap between 'observationally equivalent' individuals in the sense that their skills set, such as educational attainment and labour market experience, are identical. However, there may also be unobservable skill differences between different groups that contribute to wage differences (Borjas, 2019). Moreover, evidence has shown that there are unobservable attributes, which are not directly related to skills or talent, which also contribute to wage differences.

A key argument put forward by many authors (Friedman et al., 2017; Friedman and Laurison, 2019) in the 'class ceiling' literature is that our understanding of the determinants driving the social origin pay gap are severely limited if we merely concentrate only on individuals' observable characteristics. Instead, these authors argue that it is imperative to consider how the tangible resources we inherit from the family unit and the intangible traits we are inculcated with through our upbringing confer advantage and in some instances disadvantage in the labour market. The inclusion of both demonstrate how social origin shapes our ability to seize opportunities in the labour market, through the financial support of our parents, and how it can help some navigate the labour market through having a natural understanding of opaque corporate cultural codes and establishing 'fit' within the workplace. The latter has been shown to play an influential role in the hiring and recruitment process in professional and managerial occupations.

Statistical discrimination describes a technique used by employers when they have two equally skilled workers from varying groups competing for the same job (Oaxaca, 2001). Employers will use statistics about the average performance of the two groups to predict the applicants' productivity (Arrow, 1973; Bohren et al., 2019; Phelps, 1972). Ultimately, this benefits applicants from more high-productive groups, or those perceived to have higher productivity, whilst being detrimental to those from low-productive groups.

Several studies that have experimented with fictitious CVs have exposed class biases in the hiring and recruitment process. Researchers sent out fictitious CVs to employers with identical information, varying only the race or sex of the candidates. They found that white people are more likely to receive a reply or a job offer than black people, and males are more likely to be successful in their applications than females (Altonji and Pierret, 2001; Bertrand and Mullanaithan, 2004; Fryer and Levitt, 2004; Neumark et al., 1996). Similar studies have been conducted in relation to social class. Rivera and Tilcsik (2016) conducted a CV audit study, sending out fabricated resumes to over 300 law firm offices in 14 cities in the US. The authors randomly assigned social class and gender indicators to otherwise identical CVs. They found that males from upper-class origins received significantly more call-backs as they were viewed as better fits in relation to corporate culture of the workplace and with the clientele of elite law firms, although females from upper-class origins did not experience a similar level of call-backs. This study therefore highlights the importance of social class and sex in the labour market, again demonstrating how males from upper-class origins are more advantaged than others.

Literature on the hiring and recruitment process within 'elite' firms shows that candidates from more upper-class backgrounds are generally favoured over working-class candidates despite holding the same level of education (Ashley and Empson, 2017; Ashley et al., 2015; Cook et al., 2012; Rivera, 2012; Rivera and Tilcsik, 2016). One reason for this has shown to be that individuals from upper-class origins are viewed by employers as more productive, harder working, and conscientious. However, literature suggests that there is no real statistical grounding for these assumptions, but they are more so established on social homophily, were relationships between employers and candidates are pre-existing through social networks, akin cultural tastes, or through participating in similar cultural activities (Cook et al., 2012; Friedman and Laurison, 2019). Another factor that plays a role is that recruiters in elite firms are disproportionately from affluent origins and are more likely to favour candidates who are more like themselves (Kanter, 1977; Rivera, 2012). Ultimately, this approach results in more candidates from upper-class origins securing employment in elite firms where wages are considerably higher over their equally qualified working-class peers.

Sociologists have suggested two possible reasons for the class pay gap. Firstly, the pay gap may be explained by 'supply-side' mechanisms. These include things like the upwardly mobile settling for less remunerated occupations and positions (Ashley et al., 2015; Cook et

al., 2012). This may include working in the least financially rewarding areas of a particular occupation, such as criminal law as opposed to intellectual property law, or working-class individuals self-eliminating due to their lack of 'fit' (Friedman, 2015; Friedman and Laurison, 2019) or feeling like they are abandoning their social roots (Reay, 2013). On the other hand, it also may be that those from working-class origins are more reluctant to ask for pay rises and have less access to networks to facilitate opportunities (Macmillan, et al., 2014). Research suggests those from upper-class origins have an advantage when bargaining over wage increases and promotions as it is at these points in their career that they can draw upon the soft and social skills they have been inculcated with in their upbringing (Erikson and Jonsson, 1998). Other research supplements this claim as there have been indications that those who attended private schools may be more prepared to ask for a pay rise or promotion (Anders, 2015). Other studies highlight that young adults from upper-class origins feel a greater sense of entitlement in professional workplaces and are better placed to gauge the timing and appropriateness of their request, thus increasing their chances of success (Lareau, 2015). Similar findings are noted in the gender pay literature in that women are less likely to negotiate pay rises than men (Babcock and Laschever, 2003, 2008). These studies provide an insight into the number of mechanisms that influence individuals' wages. Therefore, it is not enough just to examine individuals' level of pay, but we also need to understand the processes through which wages are decided upon and the many factors that influence them.

Secondly, it may be that the upwardly mobile are the victims of 'demand-side' mechanisms in that they are either consciously or unconsciously disfavoured and given fewer rewards in the labour market. This may operate in forms of indirect discrimination or class snobbery (Friedman et al., 2017; Friedman and Laurison, 2019), or it may operate through more subtle processes of favouritism and cultural matching (Cook et al., 2012; Friedman and Laurison, 2019). Qualitative research shows elite employers often misrecognise cultural and social traits that are associated with upper-class culture as a sign of merit and talent (Ashley et al., 2015; Rivera, 2015).

This section has drawn upon common approaches used in economics to examine wage differences between equally skilled individuals and is supplemented with literature from sociology. The guiding theoretical framework sociologists have used in understanding the social origin pay gap is from French sociologist, Pierre Bourdieu. Through using Bourdieu's work, sociologists have revealed a wide range of factors that play a role in explaining pay

gaps among equally qualified individuals from different social class backgrounds. Considering this theoretical framework in conjunction with traditional economic approaches, such as the human capital theory, can provide us with a deeper insight of the explanatories of the social origin pay gap. A key insight from economic and sociological thinking is that changes in the attributes of those in the labour market could change the distribution of labour market outcomes. Labour economists have argued that the expansion of higher education could reduce the average quality of graduate entrants (Card, 1999, 2001). An alternative narrative is built on social reproduction theory (e.g., Jacob et al., 2015) in which 'higher' social classes saw the expansion of education to the working class as a threat to their social status and responded by further cultivating the abilities of their progeny by enrolling in more prestigious courses/institutions, lucrative internships, tutoring, and extra-curricular activities. Hence, there are potentially two effects at work, pulling in opposite directions through a relative decrease in the attributes of those from working class backgrounds and an increase for those from more upper-class origins. Thus, there are at least two mechanisms a priori disputing the notion that equalising attainment might equalise earnings. Therefore, considering both economic and sociological approaches in relation to the social origin pay gap can help further our understanding of socio-economic inequalities in the UK labour market and highlight areas that require policy intervention.

1.4.2 Economic capital

When examining socio-economic inequalities in the labour market, consideration must be given to the level of wealth we inherit through our social class background and the role this plays in influencing individuals' career prospects. Bourdieu (1986, p. 24) claimed that economic capital was 'at the root of the other types of capital'. This section considers the effects of economic capital before assessing how economic capital underpins other forms of capital, which are also correlated with social origin.

Individuals from upper-class origins generally have greater access to higher levels of economic capital, more specifically their parents' economic capital which they can utilise in the labour market. This may take the form of their parents having higher salaries, considerable personal savings, or investments in property or assets. Inheriting such levels of wealth can benefit an individual's prospects in the labour market in many ways. Firstly, it enables them to increase their period of job searching during which they can be subsidised by their parents. This can be particularly important after graduating from university when students from low-income households may experience more pressure to secure employment

quickly. Additionally, they are less likely to able to seek financial support from their parents to help with their living costs or to help pay off their student loans (Witteveen and Attwell, 2017).

Secondly, individuals from upper-class origins can take on work which may be less beneficial short-term but more favourable in the long run. In industries such as acting and journalism, this has shown to play a crucial role in individuals' career development. Research highlights individuals from more affluent backgrounds face occupational advantages in that they can rely upon family economic resources beyond their own income. Friedman et al. (2017) highlighted that within the acting profession, this acts as a safeguard from the insecurity of the industry and allows individuals to react more dynamically to opportunities and work. Actors attested this through personal experiences and claimed that it would be impossible to survive in the industry without this financial safety net. Similarly, this case study also highlights from working-class backgrounds are more prone to suffer from the precariousness and uncertainty of the acting industry.

Thirdly, individuals from upper-class origins can utilise their parents' economic capital to support them through an unpaid internship (Macmillan et al., 2014) - the modern gateway to a graduate job and the first step on the professional ladder. Internships are becoming increasingly important in the labour market, particularly within industries such as law, finance, business, and journalism. One study found that 70% of internships were unpaid, and over a quarter of graduates (27%) had completed at least one unpaid internship (Cullinane and Montacute, 2018). However, the ability to complete an unpaid internship for a university student is heavily dependent upon the financial support of their parents. Those from working-class backgrounds are more likely to lack the economic capital to undertake such opportunities (Allen et al., 2013; Crawford and Wang, 2019; Duff, 2017; Swan, 2015; Tholen et al., 2013; Wang and Crawford, 2019). A previous government report (Milburn, 2009) affirmed that unpaid internships are a significant obstacle to working-class people trying to enter the professions as such opportunities are only available to those who have sufficient levels of finance to support them. In most cases, it is only individuals from wealthy origins who can afford to capitalise on such opportunities. With unpaid internships now the norm in many industries, for those who do not gain these forms of work experience this can have an adverse effect on their career prospects. Employers may view them as less keen or less committed over their more affluent counterparts who can afford such privileges. Studies have highlighted how individuals exploit their social networks to secure exclusive

internships and how parents from upper-class families deploy their resources to achieve this for their offspring (Bathmaker et al., 2013).

Not only has individuals' social networks been shown to play a role in the social origin pay gap but individuals' cultural knowledge, interests, and tastes has also been shown to play a role. The next section considers how cultural capital plays a role in explaining the social origin pay gap in the UK labour market.

1.4.3 Cultural capital

Economists have acknowledged that social class inequalities are not purely economic, but they also encompass the social, the cultural, and the political (Macmillan et al., 2014; Piketty, 2014). The concept of 'capital' has been long standing throughout history. The economic notion of capital can be traced back to Adam Smith (1776) who viewed machines, assets, and people as forms of 'capital' from which profit can be extrapolated, a viewpoint which has dominated economics since (Hodgson, 2014). Prior to Bourdieu (1986) 'capital' was thought of as something which was quantifiable, measurable, and tangible. However, Bourdieu argued that there is another form of capital that certain individuals have, acquired through the family unit, which operates more subtly but can nonetheless like all other forms of capital be converted into economic gain, whether it be in the schooling system, university, or in the labour market. Bourdieu (1997) contended that previous approaches, giving primacy to economic theory, had implicitly disregarded non-economic factors and their impact on and complex relationship with socio-economic inequalities. Thus, following Bourdieu, capital has been used as an analogy for diverse social issues. Bourdieu argued that a simultaneous focus on cultural and economic inputs was required to understand social class inequalities (Crompton, 2008; Flemmen, 2013).

The works of Bourdieu bears relevance for our understanding of the social origin pay gap as like much of the empirical work on class inequalities, his theoretical work placed a strong focus on how certain advantages are transferred from one generation to the next. Bourdieu affirmed that fundamentally, cultural capital is a class resource (Kingston, 2001; Lareau and Weininger, 2003; Wallace, 2018), which is disproportionate across social fields through systems of inheritance and contributes to the accumulation of social and economic advantages in social fields (Sullivan, 2001; Wallace, 2018). One major defining factor introduced by Bourdieu, is how the transmission of economic capital is undeniably visible, whereas the transmission of cultural capital occurs over a prolonged period, often through a

more subtle form of socialisation, i.e., one's social class background (Devine, 1998; Flemmen, 2013; Goldthrope, 2007; Robbins, 2005; van de Werfhorst, 2010). In turn, this transmits advantage across generations (Bourdieu, 1984; Lareau and Weininger, 2003). Considerable evidence supports this highlighting that cultural capital is transmitted from one generation to the next (DiMaggio and Useem, 1982; Kraaykamp and van Eijck, 2010; Roksa and Potter, 2011). Thus, cultural capital is disproportionate across social classes, which in turn contributes to educational inequalities and the uneven educational achievement of children from different socio-economic backgrounds (Bourdieu, 1997). Such effects should be nullified when dealing with individuals who have equal levels of educational; however, the social origin pay gap shows otherwise. The transmission of cultural capital is an important factor in understanding socio-economic inequalities as its ability to be transformed into monetary value plays a role in perpetuating socio-economic inequalities.

Bourdieu (1984, 1997) argued that cultural capital exists in three forms: in the embodied state, exemplified through an individual's dispositions such as their speech, accent, mannerisms, linguistics etc.; in the objectified sense, such as books, art, instruments etc.; and in the institutionalised state, e.g., educational qualifications. Such forms of cultural capital are often aligned with what Bourdieu called 'highbrow' culture, which is synonymous with upper-class culture. These forms of culture, or class attributes, are widely regarded as more sophisticated and often associated with wealth and high social status. Once the culture of the dominant group in society becomes institutionalized as 'legitimate', it becomes widely recognized as a marker of cultural superiority (Wildhagem, 2009). In western societies, highbrow culture is often synonymous with the intellectual and the elite (Bourdieu, 1984). As a result, highbrow culture is assigned a higher value over more traditional forms of culture. For instance, listening to classical music or attending the opera is viewed as more cultivated than listening to pop music or going to the football. Thus, individuals who exhibit a familiarity and awareness of highbrow culture are often regarded as more intelligent, competent, and articulate. Cultural capital is often viewed as a quality of a person that allots certain forms of advantage in particular fields, such as educational institutions and occupational markets (Bennett and Silva, 2011). This form of capital has been previously utilised to illustrate socio-economic discrepancies in educational attainment (De Graaf et al., 2000; Tramonte and Willms, 2009) but more recent research also shows how cultural capital can play a role in the labour market.

Bourdieu's (1997) notion of cultural capital encompasses different kinds of knowledge, attitudes, tastes, and linguistic codes. Bourdieu affirmed that most of our cultural assimilation is acquired through our family socialisation and inculcated over time as personal dispositions through systems of inheritance and embodiment. He contended that cultural capital is hereditary in nature and as a result, it is onerous to change a cycle that augments cultural capital from one generation to the next. Bourdieu argued that the physical time invested by the family is fundamental to the intergenerational transmission of cultural capital. This can affect individuals' perceptions of others as the effects and signifiers of our social origin can remain visible throughout one's life even when we achieve upward social mobility (Johansson and Jones, 2019). Many of our personal characteristics, such as our speech, the way we communicate and conduct ourselves with others, are acquired and learned through our childhood and upbringing. This is evidenced in several studies that have concluded that cultural capital is correlated with social origin (Baumert et al., 2003; Sullivan, 2001; Weingartner and Rossel, 2019).

Whilst cultural capital has been researched extensively in explaining socio-economic differences in educational attainment (De Graaf et al., 2000; Lamont and Lareau, 1998; Tramonte and Willms, 2009), it is less established in research on the determinants of individuals' labour market outcomes. Furthermore, it has yet to be considered within the discipline of economics. Therefore, Bourdieu's work is an appropriate framework to adopt for the examination of social origin pay gaps as it is said to offer 'the most perceptive approach to unravelling the complexities of class today' (Savage et al., 2015, p. 19). Thus, drawing upon Bourdieu's research provides us with a useful theoretical framework to understand and explain how pay differences between equally qualified individuals from different social-class backgrounds arise. This thesis aims to address this gap through empirically examining to what extent cultural capital explains the social origin pay gap. Another form of capital that has been shown to play a role in the pay gap is social capital.

1.4.4 Social capital

Social capital theory contends that distinct benefits arise from the breadth and quality of social relations among individuals (Bourdieu, 1993; Coleman, 1988), both collectively (Putnam, 1993) and individually (Coleman, 1988; Lin, 1999). Evidence indicates social capital is positively linked to job quality (Franzen and Hangartner, 2006; Oesch and Ow, 2017) and wages (Behtoui and Neergaard, 2010; Stone et al., 2004). Although individuals can establish their own social networks, in life we often inherit a large part of our social

capital through our parents' social networks, at least until early adulthood. Research shows that holding key social relations in the labour market, such as those working in professional and managerial positions, are generally more common among those from upper-class social backgrounds (McNamara Horvat et al., 2003; Pichler and Wallace, 2009). This results in those from upper-class origins being more likely to inherit advantageous social networks. Social capital plays a key role in allocating and securing employment opportunities. Research shows those from higher class backgrounds have greater levels of access to these forms of social networks (Granovetter, 1995; Royster, 2003; Smith, 2007). Through these relations, individuals gain more access to information on employment opportunities and contacts in the labour market, which can assist with securing employment (Triventi, 2003). Once individuals do secure employment, their social capital continues to play a role within the workplace.

Evidence shows that having a 'sponsor' can significantly aid an individual's chances of entering a high-status occupation (Jacob et al., 2015; Tholen et al., 2013). The 'sponsor' could be established through pre-existing social networks, cultural affinity (Cook et al., 2012) or even through attending the same private institution (Jacob et al., 2015) - all of which are related to social class. Randle et al.'s (2015) study of the UK film and television industry highlighted how social capital can assist an individual in building their reputation and status within an organisation. Similarly, Kay and Hagan's (1998) study showed how distinct forms of social capital – such as client contacts and access to opaque networking opportunities – played a key role in the promotion process to partner position within corporate law firms. On the other hand, research suggests that the absence of social capital can impede an individual's chances of securing employment within some professions (Friedman et al., 2017; Randle et al., 2015).

A common gateway to securing a 'top job' nowadays is through completing an internship whilst studying at university. As previously outlined, in many sectors and industries these internships are often unpaid, the economic implications of which have already been discussed. This section examines the role social capital plays in these forms of internships. For instance, many internships are not advertised and are acquired informally through social networks (Sutton Trust, 2018). Those who do have personal contacts with lawyers, accountants, stockbrokers etc., are more likely to be informed of unannounced work placements and apply for them. Others who do not have such contacts simply cannot. If an individual has the social capital to access an unpaid internship and the economic means to

support themselves, then this can have many positive bearings on their career progression and earnings. A study on recruitment into the UK's financial services industry exemplified this. Browne (2006) found that employers recruited an elite cohort to their fast-track leadership programmes specifically via internships. This demonstrates how possessing more than one type of capital can supplement other forms of capital, and result in individuals securing a desirable first step on the career ladder which can snowball to more opportunities.

1.4.5 How capital augments

Whilst possessing one form of capital does not guarantee a unanimous possession of all forms of capital, research shows that if an individual possesses one form of capital it increases their chances of acquiring other forms of capital. Research suggests that cultural capital and social capital are intertwined. Networks can induce culture (Edelmann and Vaisey, 2014; Pachucki and Breiger, 2010) and cultural interests can often be a by-product of our social relations. On the other hand, culture also shapes networks (Reeves and de Vries, 2019). Social relations are often established due to cultural matching when two individuals or more identify they hold identical or akin cultural preferences and likings (Vaisey and Lizardo, 2010).

The overlaps in these various forms of capital play a role in the labour market. For instance, an individual's economic capital allows them to pursue an unpaid internship and can often be acquired via their social capital. Through this they can learn the desired forms of cultural capital which are sought in the workplace. Randle et al. (2015) demonstrated how individuals within the film and TV industries utilise their experiences through unpaid internships to expand their social networks, acquire pertinent skills, and perhaps most importantly to demonstrate their ability to 'fit' within the workplace. The experience gained through an unpaid internship helps an individual gain familiarity with the 'right' cultural capital within the corporate workplace, which can then increase their chances of securing a graduate job.

Recent research in economics and sociology has begun considering how economic, cultural, and social capital collectively impact labour market outcomes (Friedman and Laurison, 2019; Macmillan et al., 2014). It is important to consider all the various forms of resources as they interconnect and subsequently reinforce one another. The experience gained in work placements and internships is critical in one's chances of securing employment after graduation as an individual's academic credentials are not viewed in isolation. It has been noted that the cynosure on institutional cultural capital is assessed in parallel with embodied

cultural capital (Ashley and Empson, 2017). Whilst obtaining a good degree is still nonetheless a prerequisite for most 'top-jobs', one's academic credentials may be sidelined if they fail to demonstrate 'fit' in the recruitment process. Allen et al.'s (2013) study focused on students work placements in the arts and creative fields in England. The authors found that it was essential for students to possess economic, cultural, and social capital to successfully obtain placements in the creative industries. Likewise, Friedman et al. (2017) demonstrated the importance of considering all three of these forms of capital. Their study highlighted the extent to which one can succeed within the acting profession is fundamentally determined by their economic resources, embodied cultural capital, and social networks, independent of their ability.

1.5 What is unknown about the social origin pay gap?

An important difference between social origin compared to sex, ethnicity or sexual orientation is that the latter are all features of the respondent as a person, whereas social origin is derived from responses to a series of questions recollecting the status of a previous generation. Consequently, the more questions that are required to derive a variable, the more likely it becomes that the variable cannot be constructed, as data could be missing for any of several underlying questions. If non-response to any of the questions is systemic then the resulting variable is likely to be biased (for overview of issues and mitigation strategies see: Groves et al., 2002; Groves and Couper, 2012; Jelke et al., 2011; Särndal and Lundström, 2005). As a result, previous studies have omitted individuals who do not have social origin information. This thesis contributes to the social origin pay gap literature by examining the pay gaps for all survey respondents in the LFS and the UKHLS, including those with undefined social origins (10.5% in the LFS and 17% in the UKHLS).

Furthermore, previous studies have almost exclusively used the 'dominance approach' when proxying for respondents' social origin i.e., using the 'higher' of a respondent's mother or father's occupation when they were 14 as a proxy for their social origin. With more women in the workforce now than ever and more women being the 'breadwinner' in UK households, this method is somewhat outdated. Another weakness in this approach is that it only considers the occupation, and by extension the resources of one parent. Chapter 3 considers the activity status and education of respondents *both* parents to act as a more comprehensive proxy for respondents' social origin. Moreover, the literature review highlights how cultural capital and social capital play a role in explaining class-wage penalties. Chapter 4 uses a range of proxies for cultural capital and social capital to empirically examine to what extent

these forms of capital play a role in explaining the social origin pay gap, the first study of its kind to do so.

Therefore, this thesis will contribute to the evidence base on education and labour market outcomes by addressing the following research questions:

- To what extent does social origin explain labour market outcomes independently of level of education?
- Secondly, what are the factors mediating the association of wages/employment and social origin?

Friedman and Laurison's (2019) main recommendation for further research was to investigate whether the 'class ceiling' was a new phenomenon. The authors recognised that the cross-sectional data they utilised did not allow them to examine the social origin pay gap over an extended timeframe. Thus, the authors were unable to examine whether the pay gap existed in the past, when it emerged, and whether it has increased or decreased over time. This thesis aims to address this research gap through using data from waves 1 to 9 (2009-2019) from the UKHLS. The UKHLS follows approximately 100,000 individuals in 40,000 households on an annual basis. The strength of the UKHLS relative to other datasets often used in this field is that it permits a far richer analysis of the individual, their attributes, and circumstances than through administrative or labour market data. Longitudinal research can go beyond the static measures of earnings and occupations to better elucidate labour market outcomes and their relationship to class origin (Longhi and Nandi, 2015).

In summary, this chapter has provided a critical review of the evidence base on the social origin pay gap, identified several research gaps, and outlines how this thesis aims to address these gaps. The preceding chapters provide empirical analysis using the LFS and the UKHLS to address such gaps.

Chapter 2   Is the social origin pay gap bigger than we thought? Identifying and acknowledging workers with undefined social origins in survey data

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2.1 Abstract

This chapter investigates whether recent empirical studies have underestimated the social origin pay gap by omitting respondents with undefined social origins. Specifically, this relates to individuals that were not assigned a social origin because their household composition was not clear, nobody was earning in the household, or the occupational identity of the main wage earner could not be identified. Data from the Labour Force Survey (LFS) is analysed to establish the prevalence of undefined social origins and to what extent the socio-economic characteristics of those with undefined social origins are different from those who can be identified using the Standard Occupational Classification (SOC)[2]. We examine how omitting respondents with undefined social origins affects estimates of social origin pay gaps. The results show that 10.5% of the working age population have undefined social origins and that the labour market outcomes of these people are on average much worse than those with defined social origins. Results show that omitting respondents with undefined social origins underestimates the range of the social origin pay gap and the number of people affected. The results indicate there is a further effect of parental association in the labour market or not clearly belonging to a household, which profoundly affects the life outcomes of a substantial share of the working age population.

2.2 Introduction

A recent wave of empirical work has identified the existence of unexplained social origin pay gaps, i.e., they persist even when observable characteristics such as education and a range of labour market observables have been controlled for. These estimates have been obtained by applying established analytical approaches to a variety of datasets for the UK, US and other high-income countries. Prime facie, this phenomenon is analogous to other pay gaps and has been referred to as the 'class ceiling' (Laurison and Friedman, 2016),

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[2] The Standard Occupational Classification (SOC) is a coding framework used in the UK to classify occupations, enabling comparisons of occupations across different datasets.

referencing similarities to the gender pay gap. However, asking about social origin in a survey is arguably more complicated than asking about gender or racial identities, notwithstanding that these can also be challenging issues on which survey respondents define or are defined.

In this chapter we outline the specifics of how social origin is derived in the LFS and how the sequence of questions asked for obtaining such information can have a marked impact on the results. Our contribution is that through scrutiny of how social origin is derived, we show that respondents from non-traditional/fragmented backgrounds and households with less structured occupational profiles are not identified in the SOC. Overall, the social origin of 10.5% of working age respondents is undefined, corresponding to approximately 4.7 million individuals in the UK working age population. Conceptually, this is consistent with the view that occupation-based classification of social origin is a circumscribed instrument for capturing the diverse ways through which social class intersects with labour market disadvantage in the 21st century. Empirically, the results suggest the size of the social origin pay gap and the number of individuals affected have been underestimated.

2.2.1 Earnings gaps

Research into the social origin pay gap draws on methods and insights from research on social mobility, returns to education, and gender and minority pay-gaps. Following Mincer (1974) wage equations fitted on cross-sectional data from around the world reveal that on average, more qualified individuals are better off in terms of employment and earnings than less qualified individuals (e.g., Conlon and Patrignani, 2013; Montenegro and Patrinos, 2014; Psacharopoulos and Patrinos, 2004; Walker and Zhu, 2008, 2011, 2013). For this reason, investing in education has been seen not only to improve economic competitiveness (Krueger and Lindahl, 2001; Hermannsson et al., 2014; LSE Growth Commission, 2013; OECD, 2012) but also to aid social mobility (see Duta and Ianelli, 2018 for a critical discussion).

Although qualifications are a key predictor of earnings, other empirical insights suggest income inequality is more complicated. Studies of occupational mobility show a persistence across generations in occupational attainment (e.g., Bukodi and Goldthorpe, 2011) and educational attainment (Shavit, 2007). This effect has been observed in different types of data, such as a graduate follow up survey (Crawford and Vignoles, 2014), a cohort study (Crawford and van der Erve, 2015), large-scale administrative data (Britton et al., 2019), and

the Labour Force Survey (Friedman and Laurison, 2017, 2019; Friedman et al., 2017; Laurison and Friedman, 2016). Similar effects have been observed in Scandinavian countries, Spain, and the US (Bernardi and Gil-Hernandez, 2021; Hällsten, 2013; Hersbein and Bartik, 2016; Masketasa, 2011). In addition, analogous results have been found on intergenerational income persistence (Blanden, 2009; Blanden et al., 2007; Gregg et al., 2017, 2019).

The analogy of the 'class ceiling' (Friedman and Laurison, 2019; Laurison and Friedman 2016) rests on similarities with the gender pay gap, which also persists despite observable features being controlled for (Arulampalam et al., 2007; Blau and Kahn, 2017; Blinder, 1973; Chevalier, 2007; Fortin et al., 2017), as is often highlighted through use of decomposition techniques (e.g., Fortin et al., 2011; Manning and Robinson, 2004). This approach has been extended to other sub-groups, such as ethnic minorities (Blackaby et al., 2002; Brynin and Güveli, 2012; Longhi and Brynin, 2017; Rafferty, 2012), disabled people (Berthoud, 2008), LGBT people (Bridges and Mann, 2019), and those living in rural locations (Culliney, 2017).

When it comes to collecting survey data, a crucial difference between social origin compared to sex, ethnicity or sexual orientation, is that the latter are all features of the respondent as a person, whereas social origin is derived from response to a series of questions recollecting the status of a previous generation. Prime facie, the more questions that are required to derive a variable, the more likely it becomes that the variable cannot be constructed, as data could be missing for any of several underlying questions. If non-response to any of the questions is systemic then the resulting variable is likely to be biased (for overview of issues and mitigation strategies see: Groves and Couper, 2012; Groves et al., 2002; Jelke et al., 2011; Särndal and Lundström, 2005).

2.2.2 Socio-economic classification in survey data

To identify the socio-economic status of a survey respondent's household, the Office for National Statistics (ONS) in the UK deploys the National Statistics Socio-economic Classification (NS-SEC) (ONS, 2009). This approach was developed in sociological research (e.g., Erikson and Goldthorpe, 1992; Goldthorpe, 1980, 1987, 1997) and underpins the European Socio-Economic Classification (Rose and Harrison, 2007, 2014). The LFS user guide explains that "the decision to adopt the Goldthorpe classification as the basis for the NS-SEC was made because it is widely used and accepted internationally", (ONS, 2009, p.

102). Prior to this, the ONS had commissioned the Economic and Social Research Council (ESRC) to conduct a review of social classifications (for an overview of findings see Rose and Pevalin, 2003). The NS-SEC is an occupationally based classification. First, the person that is judged to best define the household position, the Household Reference Person, is [3]. An NS-SEC category is derived from a series of questions about employment status and occupation, which are coded to the Standard Occupational Classification 2010 (SOC 2010).

The NS-SEC is underpinned by the argument that occupational conditions shape social conditions (Connelly et al., 2016; Rose and Pevalin, 2001, 2003). The development and origins of the scheme is summarised by Rose and Pevalin (2001). Each NS-SEC class is created by analysing employment relations data to identify combinations of occupational groups and employment status sharing similar employment relations. This is then mapped against an occupational classification scheme. As Connelly et al. (2016) point out in their review of occupation-based social classifications, the empirical and conceptual merits of different approaches are debated. An enduring problem of occupational indicators is "the complexity of making comparison over time when the underlying structure of the labour market has changed" (Connelly et al., 2016, p. 9). Moreover, as Lambert and Bihagen (2014) show in their simulation exercise, results are sensitive to both the indicator used and the level of disaggregation for which it is derived. These are well established criticisms of occupational-based social classifications, which researchers need to be conscious of. However, specific additional challenges arise when occupational status is derived from the previous generation, as is the case for social origin and, in turn, when these are related to earnings data, as in the social origin pay gap. Moreover, researchers have acknowledged the limitations of using parental occupation as a proxy for social class (e.g., Friedman and Laurison, 2019).

2.2.3 Who are the people with undefined social origins?

Since 2014, the LFS has included data capturing additional dimensions of social status, namely social origin, as proxied by the occupational status of the previous generation. In a series of questions, respondents are asked about their household composition when they were

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[3] According to the ONS the Household Reference Person (HRP) is identified as the person responsible for owning or renting or who is otherwise responsible for the accommodation. In the case of joint householders, the person with the highest income takes precedence and becomes the HRP. Where incomes are equal, the oldest person is taken as the HRP. For details see:
https://www.ons.gov.uk/methodology/classificationsandstandards/otherclassifications/thenationalstatisticssocioeconomicclassificationnssecrebasedonsoc2010#history-and-origins

14, who was the main earner in the household, and what was their occupation. Occupational information is then coded according to the Standard Occupational Classification 2010 (SOC 2010). From the point of view of conducting social surveys, the benefit of occupational classifications is that they can be operationalised through a handful of questions. In practice however, the approach does not produce comprehensive data as social origin cannot be identified for a substantial minority of respondents (around 10.5% in the LFS as we will see in Section 2.1). This can be problematic if those with undefined social origins are a non-random sub-population. A priori, this is likely to be the case for at least two reasons.

Firstly, as social origin relies on recall of household composition and occupational status of parents when respondents were 14, social origin is undefined for individuals not living with their family at this age. This becomes salient when that data is used to analyse labour market disadvantage. Individuals who do not live with their family during their adolescence are more likely to come from non-traditional/fragmented backgrounds. This occurs for a multitude of reasons and may include individuals who never knew their parent(s), those who lived in care, individuals whose parents were deceased when they were 14 or those whose parent(s) were imprisoned. Evidence suggests that family instability can adversely affect children in many ways (Fomby and Cherlin, 2007). A range of studies has evidenced that living in care has an enduring impact on several socio-economic outcomes including reduced educational attainment, increased homelessness, and unemployment and lower income and socio-economic status (Bywaters et al., 2016; Gypen et al., 2017; Harker et al., 2004; Jackson and Sachdev, 2001; Viner and Taylor, 2005). Evidence from the 1970 British Cohort Study used to examine outcomes for individuals at ages 16 and 30 found that when compared with individuals in foster care, residential care was associated with several poorer outcomes including mental health, life satisfaction, and self-efficacy (Dregan and Gulliford, 2012).

Secondly, occupational classifications have been criticised for being overly rigid and imposing a static view of occupational classes, which represents the economic structure at its inception but misses the dynamics of economic relations (Connelly et al., 2016; Rose and Pevalin, 2001). Moreover, an implicit assumption is that occupational status is clear and there is an understood occupational identity. However, this may not always be the case, especially in more precarious and informal employment where odd jobs may be combined into a more fragmented livelihood. This becomes even more problematic when identifying social origin because the less clear the occupational identify was for the first generation, the

less likely the second generation is to recall the occupation of the main wage earner in their household when they were growing up.

2.2.4 Objectives

The premise of this chapter is that those who do not fit the occupational classification are among those that we should be most interested in knowing about in order to understand the impact of social origin on labour market outcomes. To test this, several objectives have to be achieved.

The first objective is to scrutinise the process through which social origin information is derived and identify sub-groups of respondents by the technical reason why their social origin is undefined. A second objective is to evaluate ex post whether undefined social origin is non-random by comparing observable traits of respondents with defined and undefined social origins. A third objective is to evaluate ex-post whether undefined social origins are associated with labour market disadvantage. A fourth objective is to assess whether omission of respondents with undefined social origins has led to biased estimates of social origin pay gaps; and in that event establish the likely direction and magnitude of the bias.

2.3 Comparing those with defined and undefined social origins

In this section, we review how the social origin variable used in the LFS is derived and explore whether there is likely to be systemic non-response to this variable. We use the LFS between 2014, when information for social origin was first included, through to 2021 which is the latest data available. The LFS is the largest employment survey in the UK and provides nationally representative data[4]. The benefits of such datasets have been emphasised by other scholars (Charlwood et al., 2014). We use the third quarter as this is when the social origin questions are administered. Where the sample is extrapolated to obtain population-level estimates; this is done for a single year 2019 based on population weights provided in the LFS. 2019 was chosen as the most recent year prior to the Covid-19 pandemic. For some analyses we pool data for all the years in order to reduce influence of sampling variation. We also run analyses separately for each year in order to examine the sensitivity of results

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[4] For methodological background of the LFS please see technical guidance from the Office of National Statistics: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/labourforcesurveylfsqmi#methodology-background

to specific waves, which we find to be immaterial (see Appendix Table 2). As the focus is on the working age population, we omit all respondents that are not of working age, i.e., under 16 or over 70. Moreover, as the LFS is administered to the same respondents over five consecutive quarters, a number of respondents will be observed twice when waves are pooled. We omit respondents that have information brought forward from a previous wave, i.e., when the social origin questions were not asked and would therefore be coded as 'does not apply'. For 2019, this results in an analytical sample of 46,533 (see Table 2.1), which corresponds to a working age population of 43,155,629.

Table 2.1: Analytical sample and population estimate

Occupation of main wage earner when respondent was 14 years old (Major)	No. of observations in sample	% of (unweighted) sample	Estimated population in 2019	Estimated % of working age population (weighted)
Does not apply	4,667	10.0	4,549,117	10.5
No answer	236	0.5	231,874	0.5
SOC 1: Managers, directors and senior officials	5,602	12.0	5,385,378	12.5
SOC 2: Professional occupations	7,318	15.7	7,102,452	16.5
SOC 3: Associate professional and technical occupations	3,787	8.1	3,585,071	8.3
SOC 4: Administrative and secretarial occupations	2,298	4.9	2,164,163	5.0
SOC 5: Skilled trades occupations	9,895	21.3	8,654,481	20.1
SOC 6: Caring, leisure and other service occupations	1,542	3.3	1,515,458	3.5
SOC 7: Sales and customer service occupations	1,556	3.3	1,479,788	3.4
SOC 8: Process, plant and machine operatives	5,326	11.5	4,683,004	10.9
SOC 9: Elementary occupations	4,306	9.3	3,804,843	8.8
Total	**46,533**	**100**	**43,155,629**	**100**

2.3.1 Social origin in the LFS

From 2014 onwards, the LFS provides a variable for social origin, identifying the occupational classification of the previous generation in line with the SOC 2010 occupational classification[5]. The social origin variable (SMSOC101) identifies the

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[5] It should be noted that the ONS does not derive the NS-SEC categories of the previous generations, only their occupational classification, but in the past researchers have applied a coding rubric to map the occupational classification onto NS-SEC, see e.g., Laurison & Friedman (2016). For further details, see the LFS User Guide, Vol. 5, Section 5.1.

occupation of the main wage earner when the respondent was 14 years old. However, the question is not administered unless a satisfactory answer has been obtained for two underlying questions. A summary of these three variables and how they can each contribute to social origin being undefined is provided below in Figure 2.1.

First, respondents are asked about their household composition when they were 14 years old (SMHCOMP). Social origin will not be identified unless a respondent was either living with their parent(s) or living with other family members at this age. Consequently, respondents who were not living with their family when they were 14 drop out at this stage and therefore the main social origin question (SMSOC101) does not apply to them. If respondents were living with one or both parents or other family members, they are then asked to identify the main wage earner when they were 14 years old (SMEARNER). If nobody in the household was earning at this time, the social origin question is not administered.

If a respondent identifies a main wage earner when they were 14, they are then asked what the occupation of the main wage earner in their household was (SMSOC101). The response to this question, if given, is matched to a SOC code. Social origin can be undefined at this stage if an answer is not provided or if the response cannot be classified. In quarter three of the LFS 2019 data, information on social origin is not available for 10.5% of respondents, the majority of which are coded as 'does not apply'. This is a substantial share of the UK working age population, approximately equivalent to the combined working age populations of Scotland and Northern Ireland or the Northwest of England[6].

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[6] In 2019, the working age population of Scotland and Northern Ireland accounted for 8.3% and 3.3%, respectively and therefore stands at 11.6%. Another comparison is with the Northwest of England, encompassing Greater Manchester, Merseyside and the rest of the Northwest, which accounted for 10% of the UK's working age population in 2019.

Figure 2.1: How social origin (SMSOC101) is derived and conditions for social origins to be classified. Variable names in brackets
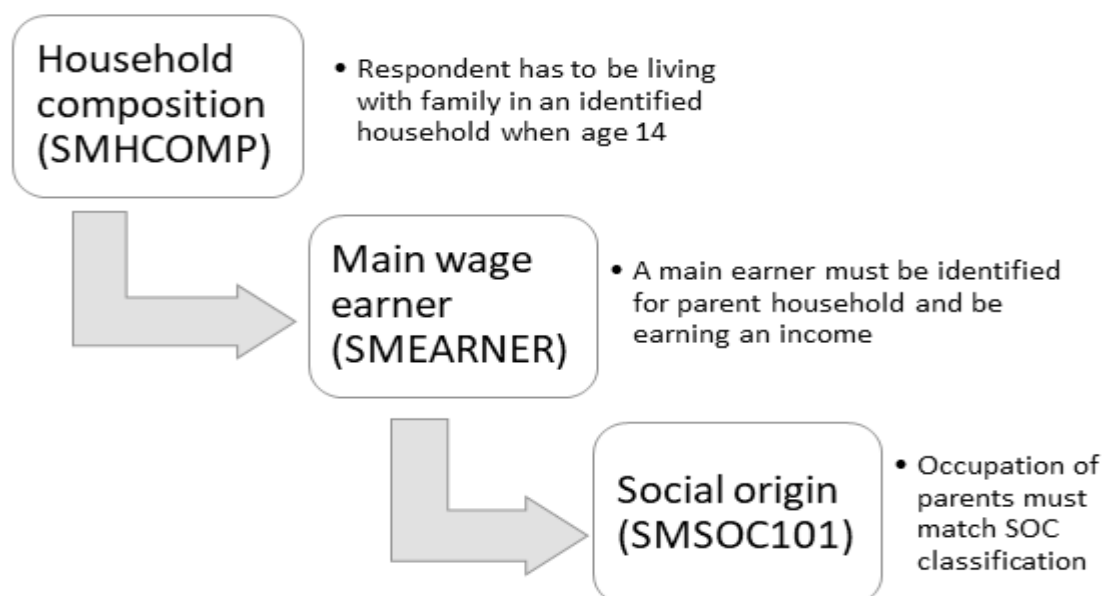
Table 2.2 further disaggregates respondents whose social origins are not defined and reveals at what stage in the survey process their social origins became undefined. The largest group are respondents where no-one was earning when they were 14, accounting for 49.3% of those with undefined social origins and 5.2% of the sample. The second largest group contains for whom the occupational identity of the previous generation could not be classified, i.e., the question was answered but the response could not be classified as a SOC code for the occupation (30.1% of those with undefined social origins and 3.2% of the sample). Jointly these two reasons account for nearly 80% of all undefined social origins. Furthermore, 15.7% of those with undefined social origins were not living with family or their household composition age 14 was unclear. The least important category in this regard are respondents explicitly not answering the question, which comprises 4.8% of all undefined social origins and 0.5% of the sample.

Table 2.2: Undefined social origins: disaggregation of missing data fields for the occupation of main earner when respondent was 14 years old (SMSOC101)

Response category		No. of observations in sample	% of unweighted sample	% of respondents with undefined social origins	Estimated working age population in 2019	Estimated % of working age population with undefined social origins
No answer		236	0.5	4.8	231,874	4.8
Not classified	Not living with family or household composition at age 14 unclear	772	1.7	15.7	769,890	16.1
	No-one was earning in household when respondent was 14 or not clear who was main earner	2,417	5.2	49.3	2,309,828	48.3
	Occupation not identified	1,478	3.2	30.1	1,469,399	30.7
Total		**4,903**	**10.5**	**100**	**4,780,991**	**100**

2.3.2 Does missingness appear random?

In order to evaluate ex-post whether undefined social origins in the LFS appear random, Table 2.3 compares selected observed features of those with defined and undefined social origins respectively. This comparison reveals differences, which are statistically significant with the exception of gender composition. Those with undefined social origins tend to be younger by about three years on average, almost half as likely to belong to a visible ethnic minority, more likely to have responded to the survey via proxy, more likely to have no qualifications, less likely to hold a degree, more likely to be on benefits, less likely to be married, more likely to live in rented accommodation, less likely to be in work, less likely to work in a professional or managerial job, and receive 28% lower hourly pay than respondents with defined social origins. In summary those with undefined social origins are demographically and socially different from those whose social origin we can define – they are disadvantaged in terms of several life outcomes, such as educational attainment, housing tenure, occupational attainment, and earnings. Based on our scrutiny of how the social origin question is derived and comparison of observed features of those with defined and undefined social origins, it is clear that undefined social origins are not a coincidence.

Table 2.3: Undefined social origins: Comparison of selected observed attributes between those with defined social origins and those with undefined social origins

| | Social origin | | | | % difference |
| | defined | | undefined | | |
	n	mean	n	mean	
age in years	41,630	45.0	4,903	42.2	-7% ***
male	41,630	47.6%	4,903	46.1%	-3% *
visible ethnic minority	41,630	10%	4,903	17.9%	44% ***
disability	41,630	21.1%	4,903	28.4%	26% ***
proxy response	41,630	32.9%	4,903	43.4%	24% ***
no qualifications	41,630	8.2%	4,903	17.3%	53% ***
degree holder	41,630	19.9%	4,903	13.1%	-52% ***
post-graduate degree holder	41,630	11.7%	4,903	6.1%	-92% ***
receiving benefits	41,630	32%	4,903	39.2%	18% ***
married	41,630	59.9%	4,903	45.8%	-31% ***
living in rented accommodation	41,630	26.9%	4,903	50.6%	47% ***
in work	41,630	71%	4,903	64.5%	-10% ***
occupational status: NS-SEC 1	41,630	14.5%	4,903	8.9%	-63% ***
occupational status: NS-SEC 2	41,630	24.2%	4,903	16.6%	-46% ***
hourly pay in £	8,935	16.4	692	12.8	-28% ***

*** p<0.01, ** p<0.05, * p<0.1

Table 2.4 expands this comparison by benchmarking each of the groups with undefined social origins against those whose social origins are defined. First, we look at those who do not provide an answer to the social origin question. It is probable that this form of non-response is largely random as estimated differences are small and insignificant, with the notable exception that those belonging to visible ethnic minorities are substantially over-represented in the 'no answer' group. For the other three groups, there are substantial and significant differences in their labour market outcomes, with undefined social origins associated with a 16-19% earnings gap, much lower representation in higher occupational status, and lower likelihood of being in work for those who were not living with their family or where no-one in the household was earning. Further inspection reveals that the three groups are demographically different from those with defined social origins, being slightly younger on average and much more likely to belong to a visible ethnic minority. They are also less likely to hold a degree and more likely to have no qualifications. In addition, respondents with undefined social origins are further disadvantaged through weaker housing tenure and are more likely to be in receipt of benefits.

Given these multiple forms of disadvantage associated with undefined social origin, can we simply treat those with undefined social origins as if they were from SOC 9 origins i.e., those whose parent(s) worked in an elementary occupation when they were 14 ? This is explored in Table 2.5 by comparing those with undefined social origins to those from SOC 9 origins. Overall, this comparison reveals a mixed picture. When compared on earnings, respondents with undefined social origins are similar to those from elementary origins and the differences are insignificant. However, the two groups are significantly different in terms of their demographic makeup. The three undefined social origin groups are younger and more likely to belong to a visible ethnic minority. These groups are also different in terms of educational attainment, with the undefined social origin groups having more polarised outcomes. Two of the undefined social origin groups (Missing: Household and Missing: Earner) are more likely to have no qualifications than the SOC 9 group but two of the three undefined groups (Missing: Household and Missing: Occupation) are more likely to hold degrees compared to those from elementary origins.

Table 2.4: Undefined social origins: Comparison of selected observed attributes between those with defined social origins and those with undefined social origins in 2019, separately identifying each undefined sub-group

		Social origin							
				undefined					
Attribute	Defined social origin (n=41,630)	No answer (n=236)		Household composition at age 14 unclear (n=772)		No-one was earning in household when respondent was 14 (n=2,417)		Occupation not identified (n=1,478)	
	mean	mean	% difference	mean	% difference	mean	% difference	mean	% difference
age in years	45.0	43.3	-4% *	45.1	0%	39.8	-12% ***	44.4	-1%
male	48%	43%	9%	49%	2%	44%	-9% ***	49%	4%
visible minority	10%	15%	48% **	20%	96% ***	17%	65% ***	20%	101% ***
disability	21%	23%	9%	31%	45% ***	33%	57% ***	20%	-5%
proxy response	33%	38%	15%	36%	9% *	39%	18% ***	56%	69% ***
no qualifications	8%	10%	24%	18%	113% ***	19%	127% ***	16%	96% ***
degree holder	20%	20%	-2%	13%	-34% ***	11%	-44% ***	15%	-23% ***
post-graduate degree	12%	9%	-24%	9%	-26% ***	5%	-55% ***	6%	-50% ***
receiving benefits	32%	27%	-15%	41%	27% ***	44%	37% ***	33%	3%
married	60%	54%	-10% *	43%	-29% ***	42%	-31% ***	53%	-12% ***
renting	27%	35%	29% ***	56%	106% ***	56%	109% ***	41%	54% ***
in work	71%	65%	-8% *	61%	-14% ***	61%	-14% ***	72%	2%
NS-SEC 1 status	15%	12%	-15%	9%	-39% ***	7%	-51% ***	12%	-21% ***
NS-SEC 2 status	24%	22%	-9%	18%	-26% ***	14%	-42% ***	19%	-21% ***
hourly pay (£)	£16.4	£15.1	-8%	£12.8	-22%	£12.4	- 25% **	£13.3	-19%

Table 2.5: Undefined social origins: Comparison of selected observed attributes between those with SOC 9 origins and those with undefined social origins in 2019, separately identifying each undefined sub-group

Attribute	classified as SOC 9 (n=4,306)	No answer (n=236)		Household composition at age 14 unclear (n=772)		No-one was earning in household when respondent was 14 (n=2,417)		Occupation not identified (n=1,478)	
	mean	mean	% difference	mean	% difference	mean	% difference	mean	% difference
age in years	47.9	43.3	-10% ***	45.1	-6% ***	39.8	-17% ***	44.4	-7% ***
male	47%	43%	-9%	49%	3%	44%	-8% ***	49%	4%
visible minority	10%	15%	47% **	20%	94% ***	17%	63% ***	20%	99% ***
disability	27%	23%	-15%	31%	13% **	33%	23% ***	20%	-25% ***
proxy response	32%	38%	19% *	36%	12% **	39%	22% ***	56%	75% ***
no qualifications	16%	10%	-37% **	18%	7%	19%	14% **	16%	-1%
degree holder	11%	20%	82% ***	13%	23% **	11%	4%	15%	43% ***
post-graduate degree	5%	9%	68% **	9%	62% ***	5%	0%	6%	9%
receiving benefits	40%	27%	-31% ***	41%	3%	44%	11% ***	33%	-17% ***
married	56%	54%	-4%	43%	-24% ***	42%	-26% ***	53%	-6% **
renting	37%	35%	-7%	56%	48% ***	56%	50% ***	41%	11% ***
in work	64%	65%	2%	61%	-4%	61%	-5% ***	72%	13% ***
NS-SEC 1 status	8%	12%	46% **	9%	5%	7%	-15% *	12%	37% ***
NS-SEC 2 status	18%	22%	24%	18%	1%	14%	-21% ***	19%	8%
hourly pay (£)	£15.4	£15.1	-2%	£12.8	-17%	£12.4	-20%	£13.3	-14%

2.4 Social origin pay gap revisited

In this section, we examine how omitting respondents with undefined social origins influences estimates of the social origin pay gap. This follows established practice where an earnings function is estimated based on pooled cross-sectional data for the years 2014-2021. We estimate a cross-sectional wage equation, where the dependent variable is the log of hourly wages. This is regressed on the category of social origin, including undefined social origins ($\beta_i S_j$). Respondents from SOC 1 (Managers, Directors and Senior Officials) origins are omitted as the reference category. The specification includes a quadratic term for age ($\gamma_1 X + \gamma_2 X^2$) and a range of controls ($\theta_k C_k$), which we extend incrementally with each specification of the model. The analysis includes controls for sex, disability, ethnicity, country of birth, year of survey, qualifications, degree classification, location of workplace, part-time work, firm size, sector of employment, and occupational status.

$$\ln(w) = \alpha + \beta_i S_j + \gamma_1 X + \gamma_2 X^2 + \theta_k C_k + \varepsilon$$

Table 2.6 reveals estimates for these progressively more elaborate wage equations. The first model only controls for demographic features and can be thought of as capturing the raw social origin pay gap. Results are in line with previous analyses of the social origin pay gap, in that that all social origins are disadvantaged vis-á-vis managerial origins. For those with defined social origins, the biggest pay gap is observed for those from SOC 9 origins, 26.3%, followed by those from SOC 8 origins at 25.7%. Examing those with undefined social origins, the most disadvanted group are those those who were not living with family (or household composition could not be identified) at 29.9%, followed by respondents from households where no earner was identified at 27.5%, and households where the occupation of the main earner could not be identified at 26.1%. Overall, these three groups of respondents for which social origin could not be identified, are affected by raw pay gaps of a similar or larger magnitude as those from SOC 8 and SOC 9 origins. A non-neglible raw pay gap of 15.1% is observed for those who did not answer the social origin question. This is of a similar magnitude to that observed for those from intermediate occupational origins.

Our second model includes controls for qualifications and therefore captures social origin pay gaps within attainment groups, i.e., the gap that remains despite individuals' educational attainment. It is important to highlight that for the most disadvantaged groups estimated pay gaps are approximately halved vis-à-vis Model 1, reinforcing how important educational

inequality is as a driver of earnings inequality. For those with defined social origins, the most disadvantaged group are those from SOC 8 origins, facing just over 12% earnings gap on average, closely followed by those from SOC 9 origins. The groups with undefined social origins face disadvantage of similar or larger magnitude. The Missing: Household group experience a larger pay gap than those from SOC 8 or SOC 9 origins at 17.7%, and the pay gap is 14.1% for the Missing: Earner group. Respondents with non-identified occupational origins are associated with a similar pay gap as SOC 8 and SOC 9 origins at 12%.

Subsequent models reveal increasingly conditioned forms of the social origin pay gap, as working in particular regions, working part-time, working for smaller firms and in low pay sectors can all affect earnings negatively. Although there is debate around controlling for such features due to their correlation with pay (Angrist and Pischke, 2008), the social origin pay gap literature highlights that these factors play a role in explaining the social origin pay gap. In addition, if we did not control for such factors we potentially run the risk of over/underestimating the effect of social origin on pay. Thus, in line with previous models and literature, we control for a range of labour market observables.

Finally, Model 9 controls for occupational status, thereby revealing the unexplained social origin pay gap that remains even when educational attainment and occupational status are accounted for. In this restricted setup just over 6% earnings gap remains for those from SOC 8 and SOC 9 origins. Of those with undefined social origins, the largest pay gap is observed for those whose parental household at age 14 could not be identified at 11.4%, followed by respondents for whom parental occupation could not be identified at 7.9%, and those from parental households where an earner could not be identified at 7.4%. All these point estimates are larger than those for the most disadvantaged groups with defined social origins. Those who did not answer the social origin question are affected by an unexplained pay similar to those from SOC 8 and SOC 9 origins.

Table 2.6: Cross-sectional wage equations 2014-2021
Dependent variable: natural logarithm of hourly wages in £. Reference category: Managers, Directors and Senior Officials (SOC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SOC 2: Professionals	0.054***	-0.013*	-0.013**	-0.014**	-0.014**	-0.012*	-0.014**	-0.013**	-0.013**
SOC 3: Associate professional	-0.029***	-0.030***	-0.030***	-0.030***	-0.030***	-0.030***	-0.031***	-0.031***	-0.021***
SOC 4: Administrative and secretarial	-0.052***	-0.041***	-0.040***	-0.039***	-0.040***	-0.040***	-0.044***	-0.041***	-0.027***
SOC 5: Skilled trades	-0.161***	-0.079***	-0.078***	-0.076***	-0.074***	-0.073***	-0.074***	-0.070***	-0.047***
SOC 6: Caring and leisure	-0.190***	-0.089***	-0.087***	-0.089***	-0.086***	-0.081***	-0.079***	-0.073***	-0.039***
SOC 7: Sales and customer service	-0.168***	-0.083***	-0.082***	-0.079***	-0.079***	-0.075***	-0.075***	-0.067***	-0.042***
SOC 8: Process, plant and machine operatives	-0.257***	-0.123***	-0.122***	-0.119***	-0.114***	-0.113***	-0.112***	-0.107***	-0.064***
SOC 9: Elementary occupations	-0.263***	-0.122***	-0.121***	-0.118***	-0.115***	-0.115***	-0.115***	-0.109***	-0.063***
No answer	-0.151***	-0.108***	-0.109***	-0.099***	-0.117***	-0.110***	-0.102***	-0.103***	-0.065***
Missing: Household	-0.299***	-0.177***	-0.177***	-0.169***	-0.166***	-0.166***	-0.157***	-0.150***	-0.114***
Missing: Earner	-0.275***	-0.141***	-0.140***	-0.138***	-0.137***	-0.132***	-0.129***	-0.123***	-0.074***
Missing: Occupation	-0.261***	-0.120***	-0.120***	-0.116***	-0.115***	-0.115***	-0.114***	-0.110***	-0.079***
Age	0.087***	0.070***	0.071***	0.071***	0.071***	0.067***	0.063***	0.060***	0.048***
Female	-0.182***	-0.199***	-0.200***	-0.200***	-0.198***	-0.148***	-0.149***	-0.122***	-0.108***
Disability	-0.121***	-0.092***	-0.092***	-0.094***	-0.093***	-0.085***	-0.086***	-0.082***	-0.065***
Non-white ethnicity	-0.032***	-0.077***	-0.070***	-0.060***	-0.071***	-0.066***	-0.073***	-0.069***	-0.043***
Survey year	✓	✓	✓	✓	✓	✓	✓	✓	✓
Qualifications		✓	✓	✓	✓	✓	✓	✓	✓
Degree classification (1st or 2.1)			✓	✓	✓	✓	✓	✓	✓
Country of birth				✓	✓	✓	✓	✓	✓
Region of workplace					✓	✓	✓	✓	✓
Part-time						✓	✓	✓	✓
Firm size							✓	✓	✓
Sector of employment								✓	✓
Occupational status									✓
Constant	2.550***	0.807***	0.699***	0.687***	0.693***	0.775***	0.887***	0.887***	0.821***
Observations	79,234	79,234	79,234	79,234	79,234	79,234	79,234	79,234	79,234
R-squared	0.06	0.19	0.32	0.32	0.32	0.33	0.34	0.36	0.38

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure 2.2: Unexplained social origin pay gaps 2014-2021, in relation to gender, ethnicity and disability pay gaps
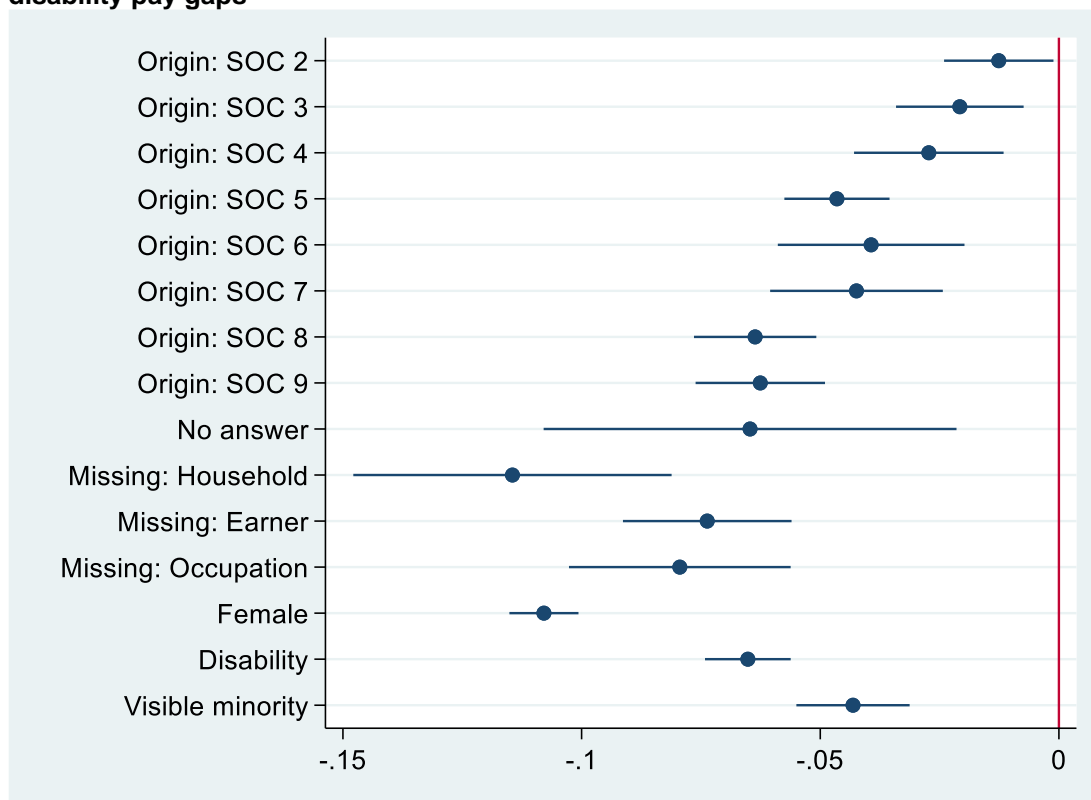
The estimates for the unexplained pay gap are summarised graphically in Figure 2.2 that shows point estimates and their 95% confidence interval. In order to place the magnitude of these pay gaps in context, the coefficients for the gender, disability, and ethnic pay gaps are also plotted. The point estimate for those whose parental household could not be identified is slightly larger than the gender pay gap. Where social origin could not be derived due to unidentified earner or occupation, the effect is smaller than for the gender pay gap but slightly larger than for ethnicity and disability pay gaps. Those who did not respond to the question are associated with an unexplained pay gap of a similar magnitude as those who are disabled. It is also clear from Figure 2.2 that the confidence intervals on the point estimates for the undefined groups are large. Therefore, it needs to be borne in mind when interpreting these findings that the specifics of any ranking of earnings gaps will be affected by sampling variation. At a glance, it can be observed from Figure 2.2 that the pay gap for the No Answer, Missing: Earner and Missing: Occupation groups are statistically similar to those observed for SOC 8 and SOC 9 origins and the disabled, but larger than the ethnic pay gap. The Missing: Household group is affected by an earnings gap that is statistically similar to the gender pay gap but larger than those associated with SOC 8 and SOC 9 origins. Moreover, these estimates represent averages for an eight year period, from 2014 through 2021. Whilst there is some variation between years, the pattern of disadvantage observed is not sensitive to choosing a particular year (see Appendix Table 2).

2.4.1 Has omitting undefined social origins led to biased estimates of the social origin pay gap?

The question that remains is whether omission of respondents with undefined social origins has led to biased estimates of social origin pay gaps. Drawing on both the descriptive statistics and the regression results it is clear that average hourly earnings are lower when those with undefined social origins are included and therefore, omitting those respondent leads to biased results in a general sense. Evaluating whether the specific concept of the social origin pay gap has been underestimated in previous work requires a bit more elaboration. The estimates for the pay gaps of those with defined social origins (as produced in Table 2.6) are not very sensitive to whether those with undefined social origins are included as an additional category or simply omitted (see Model 2 in Table 2.7).

However, the estimated pay gaps of those with undefined social origins were for three out of four groups greater than those for SOC 8 and 9 origins and therefore, omitting these observations clearly underestimates the potential range of social origin pay gaps. However, a complication arises in that the magnitude of the impacts is inherently sensitive to the definitions of the groups being compared. For instance, if this chapter were focussing on ethnic pay gaps, a disaggregation of the simple visible minority variable would likely to lead to a wider range of pay gaps as the extent of disadvantage affecting different ethnic groups varies (see e.g., Brynin and Güveli, 2012). The hypothetical question we would ideally like to answer is, if the social origins of the undefined groups could be re-categorised into their respective SOC groups, would the estimated social origin pay gaps be materially different than when they were omitted?

By definition, a precise answer to that question cannot be obtained as the social origins cannot be revealed. However, the comparisons illustrated in Table 2.5 suggest those with undefined social origins share many characteristics with those from SOC 9 origins and would therefore disproportionately swell those categories. A simple test would therefore be to recode those with missing social origins to SOC 9 origins. In the absence of better information, we experiment with recoding respondents with undefined social origins to SOC 9 origins. This has the disadvantage of potentially overestimating the impacts by concentrating all respondents in one category. An alternative approach would be to apply an imputation method to re-classify those of undefined social origin. This is an expansive topic in its own right and well beyond the scope of this chapter to explore the wide range of potential imputation methods available. Instead, we apply the SOC 9 recode as a preliminary

exploration and then compare this with the original specification from Table 2.6 and a model where undefined social origins are omitted.

Table 2.7: Unexplained social origin pay gaps 2014-2021. Comparing estimates based on treatment of respondents with undefined social origins

	(1)	(2)	(3)	(4)
SOC 2: Professionals	-0.015**	-0.015**	-0.015**	-0.015**
	-0.007	-0.007	-0.007	-0.007
SOC 3: Associate professional	-0.019***	-0.019**	-0.019***	-0.019***
	-0.007	-0.007	-0.007	-0.007
SOC 4: Administrative and secretarial	-0.030***	-0.030***	-0.030***	-0.030***
	-0.01	-0.01	-0.01	-0.01
SOC 5: Skilled trades	-0.049***	-0.049***	-0.049***	-0.049***
	-0.006	-0.006	-0.006	-0.006
SOC 6: Caring and leisure	-0.042***	-0.040***	-0.042***	-0.041***
	-0.011	-0.011	-0.011	-0.011
SOC 7: Sales and customer service	-0.042***	-0.041***	-0.042***	-0.042***
	-0.01	-0.01	-0.01	-0.01
SOC 8: Process, plant and machine operatives	-0.061***	-0.061***	-0.061***	-0.061***
	-0.007	-0.007	-0.007	-0.007
SOC 9: Elementary occupations	-0.064***	-0.064***	-0.073***	-0.072***
	-0.007	-0.007	-0.007	-0.006
No answer	-0.065***	-0.065***	-0.065***	--
	-0.024	-0.024	-0.024	--
Missing: Household	-0.107***	--	--	--
	-0.022	--	--	--
Missing: Earner	-0.079***	--	--	--
	-0.009	--	--	--
Missing: Occupation	-0.081***	--	--	--
	--	--	--	--
Female	-0.100***	-0.099***	-0.100***	-0.100***
	-0.004	-0.004	-0.004	-0.004
Disability	-0.068***	-0.069***	-0.068***	-0.068***
	-0.005	-0.005	-0.005	-0.005
Non-white ethnicity	-0.046***	-0.047***	-0.046***	-0.046***
	-0.007	-0.007	-0.007	-0.007
Observations	79,234	73,729	79,234	79,234
R-squared	0.458	0.457	0.458	0.458

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2.7 compares alternative approaches for handling undefined social origins in a wage equation estimating social origin pay gaps. All regressions include controls for age, survey year, qualifications, degree classification, country of birth, region of workplace, whether respondents work part-time, firm size, sector of employment, and occupational status. The specification of all models is that for unexplained pay gaps but, additional coefficients are redacted to preserve space and standard errors are reported below the estimated coefficients. The first model reproduces Model 9 of Table 2.6 and includes undefined social origins as separate categories. The second model omits all respondents with undefined social origins.

Model 3 reclassifies the three unidentified categories for which social origins could not be derived as SOC 9. Finally, the fourth model reclassifies the three undefined social origin groups and those who did not answer 'the occupation of the main wage earner when they were 14' question as SOC 9. The results for Model 2 reveal that omitting those with undefined social origins has only a small impact on coefficients for defined social origins. However, a larger effect is observed in Models 3 and 4 when undefined social origins are re-classified to SOC 9. The magnitude of this effect is substantial, equivalent to just under a percentage point's earnings gap. That is similar to the distance between the pay gaps observed for SOC 2 and SOC 3 origins, however, perhaps smaller than expected given the scale of negative impacts previously observed, particularly for the Missing: Household category. As we saw in Table 2.2 and Table 2.3, whilst the number of observations for the undefined groups is approximately similar to those with SOC 9 origins (4,903 and 4,306 respectively), only about one in seven of respondents' social origin is undefined because their household information was missing. Moreover, and crucially, as we observed in Table 2.4 and Table 2.5, the undefined groups are less likely to be in employment, so will be relatively under-represented in any analyses based on wages. In addition, as previously noted, those with undefined social origins are more likely to have a proxy response and be of a visible ethnic minority. Thus, we drop all proxy responses and those of visible ethnicity from the undefined social origin responses and re-run the regressions. The results of which we find to be immaterial.

2.5 Discussion: Implications for practice and theory

This chapter sets out our investigation in four stages. First, an examination of how the social origin variable is derived - this established that respondents' social origins are undefined due to specific attributes of the previous generation's household. Second, a comparison of observable features of those with defined and undefined social origins - this revealed that missingness of social origins is non-random. Third, further analysis of the characteristics of these groups found that undefined social origins are associated with economic and social disadvantage across a range of indicators, including education, occupational status, and earnings. Fourth, estimation of class pay gaps are shown to be significantly and substantially underestimated when data for those with undefined social origins are omitted. Overall, the analyses demonstrate that those who do not fit the occupational classification are among those that we should be most interested in knowing about in order to understand the impact of social origin on labour market outcomes. Moreover, these respondents represent

approximately 4.8 million individuals of working age, living in the UK. This group is not typical, but, on average, are younger, more likely to be of colour and more likely to be disabled than the population at large. They share similar material outcomes as those from elementary origins but are demographically different, and as we have demonstrated, do not fit well into an occupation based social class schema.

Respondents with undefined social origins present labour market researchers with an empirical and a conceptual problem. How should empirical issues be addressed? First, it is imperative that respondents with undefined social origins should not be dropped as it forfeits information about a large sub-population and is likely to lead to biased parameter estimates. Our preferred solution is simply to include these groups as separate categories. This is the simplest solution. It lends these respondents a voice and the results are straightforward to interpret. In large-scale social surveys, it may be possible to re-classify observations by drawing on other observed features. This is an area for future research, whether through statistical imputation approaches or through artificial intelligence classification algorithms. These would complicate analyses through additional steps and require assumptions to which results would inevitably be sensitive. In order for researchers to pursue such approaches, it needs to be clear that obtaining simulated but comprehensive social origin data within a specific occupational framework provides sufficient analytical benefits to justify the additional complications. Whilst the focus of this chapter has been on the UK LFS, similar levels of missingness of parental occupation have been found in other data sets e.g., the 1958 National Child Development Study (Betthaeuser and Bourne, 2016). Moreover, our preliminary analysis of data from the Higher Education Statistics Agency for students in higher education in 2018-19 shows that NS-SEC codes of parents was missing for 18.4% of the sample. We observed a similar level of missingness for parental occupation in the UK Household Longitudinal Study. Further research could examine the item non-response of social origin in other UK datasets this will be explored in Chapter 3.

A less straightforward issue to conclude is how this affects occupation-based social classifications conceptually? The findings presented in this chapter chime with well-established criticism of occupation-based classifications as being overly rigid or too static to capture the dynamics of a fluid social reality. However, it needs to be borne in mind that analysing the role of social origin in the labour market benefits from social origin indicators being available as part of key labour market statistics. The relative simplicity of occupation-based classifications makes them suitable for large-scale application in surveys and therefore

more easily deployed as part of the national statistics programme administered by the ONS. For the purposes of empirical labour market research that aims to generalise about a population, any proxy for social origin must pass the test of being straightforward to gather data for at scale. Therefore, on balance, labour market research is far richer using these frameworks, whilst acknowledging their limitations, than going without simple social origin proxies in surveys. Moreover, as demonstrated earlier, a thorough understanding of how this data is collected and under what circumstances respondents 'drop out' of the classification can be used to meaningfully interpret findings for those with undefined social origins.

Not being identified in an occupation-based classification is associated with specific forms of economic and social disadvantage. This group displays characteristics of a more diverse society that is perhaps not aligned with historical notions of the industrial working class. This is, in itself, a much longer discussion, but what does it mean for the specific concept of the social origin pay gap? There is no doubt that the availability of social origin data in national statistics has been an overwhelmingly positive step – bridging research on earnings and social mobility. This has highlighted and created awareness of the insidious nature of class-based disadvantage. However, we argue that if anything, the social origin pay gap as estimated in the wave of research that has emerged since social origin was first included in the LFS in 2014 is a conservative estimate of this material disadvantage. We have demonstrated that omitting those that do not fit the classification leads to an underestimate. Moreover, built into the unexplained social origin pay gap are selection issues that are likely to lead to a further channel by which underestimation takes place. For instance, as shown in the descriptive analyses, labour market attachment varies, so there is likely to be a survivor bias in those from the most disadvantaged backgrounds that make it into work.

2.6 Conclusion

In conclusion, this chapter re-examines how researchers have applied the social origin variable (SMSOC101) in the LFS to estimate wage equations and argues that for social origin, item non-response is non-random. We show this by disentangling the way the social origin variable is derived and disaggregating the non-response groups as far as possible. We highlight the characteristics of those to whom the social origin question does not apply and show that overall, this group reports less favourable outcomes in relation to education, occupational attainment, and pay in comparison to those who do report social origin.

We estimate wage equations and show that a subgroup of respondents who did not report social origin have a lower wage coefficient than those from SOC 9 origins i.e., those whose parents were employed in elementary occupations. This suggests that the social origin wage gap is larger than previously estimated. Furthermore, the wage coefficients for this group are statistically significant even after considering a range of demographics, educational attainment and labour market observables. Therefore, we argue that previous empirical studies that have omitted respondents with undefined social origins have underestimated the range of the social origin pay gap and the number of individuals affected.

Our results contribute to a theoretical criticism of the internal logic in the SOC schema, in that those who do not fit into this occupational framework are omitted from studies on social origin pay gaps and possibly previous studies on social mobility. This highlights how respondents from non-traditional/fragmented backgrounds are not captured in the way social origin is operationalised. The results from this chapter indicate that the excluded group (comprising 10.5% of the working age population) is non-random and has several characteristics that indicate disadvantage in education, employment, and pay.

However, there are relatively simple ways in which the framework could be operationalised and data from social surveys could be used to address this. As shown here, those with undefined social origins could be acknowledged as a separate group and included in labour market research. However, there are differences within this group and further analysis would still be required to better understand the underlying drivers of disadvantage for the various sub-groups. Longer term, surveys should be enhanced to probe more deeply into non-traditional backgrounds, e.g., what is behind not living with parents? Is it care experience or some other experience associated with disadvantage that social policy could aim to address?

Our findings show, in line with previous research, that occupational backgrounds (employment relations) have an important intergenerational impact on labour market outcomes. What our analyses adds, is that there is a further effect of parental association with the labour market or not clearly belonging to a household, which profoundly affects the life outcomes of a substantial share of the working age population. The latter is particularly important given that there is already compelling evidence of labour market, educational and socio-economic effects of having been part of the care system in childhood (Bywaters et al., 2016; Gypen et al., 2017; Harker et al., 2004; Jackson and Sachdev, 2001; Viner and Taylor,

2005). Overall, the results reinforce the urgency to better understand and address socio-economic inequalities in the UK labour market.

Chapter 3   The Social Origin Pay Gap in the UKHLS

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3.1 Abstract

This chapter uses data from waves 1 to 9 (2009-2019) of the United Kingdom Household Longitudinal Study (UKHLS) to further examine the social origin pay gap and item non-response for social origin in relation to the pay gap. Following the dominance approach, when we proxy for respondents' social origin via the 'highest' occupation of their parents, we observe a significant pay gap for those from undefined and working-class origins, with the pay gap being the largest for those with undefined social origins. When we use total parental occupation as a proxy for social origin, we observe that the pay gap is largest for respondents from 'lower' social origins. When we proxy for social origin using parental education, we observe similar results in that those whose parents have lower levels of education report a larger pay gap. In addition, we observe significant pay gaps for respondents from 'lower' social origins when we proxy for social origin using total parental education, and when considering respondents' highest parental occupational status and their parents' highest level of education. Thus, the chapter provides a valuable contribution to the literature as it uses a range of proxies for social origin to examine social origin pay gaps. These results supplement the findings from Chapter 2 in that individuals with undefined social origins report the largest pay gap of all social origin groups. Therefore, this chapter provides further evidence that previous research has underestimated the size of the social origin pay gap and number of individuals affected by omitting individuals with undefined social origins.

3.2 Introduction

Chapter 1 provided a critical review of the social origin pay gap evidence base, with Chapter 2 using the LFS to examine item non-response for social origin and its implications for the social origin pay gap. What has yet to be explored in the literature is estimating pay gaps via proxies that consider the 'totality' of parental resources and the examination of the pay gap longitudinally. This chapter uses data from waves 1 to 9 (2009-2019) of the UKHLS to examine the social origin pay gap. The UKHLS is the largest UK household longitudinal

survey that tracks approximately 100,000 individuals across 40,000 households on an annual basis to see how their economic, social, and personal circumstances changes over time (David and Sutton, 2011; Postel-Vinay and Sepahsalari, 2019). The survey provides information on respondents' mother and father's occupation and education, and other social class indicators that are relevant for furthering our understanding of social origin pay gaps; some of which will be explored in Chapter 4. We estimate Ordinary Least Squares (OLS) regressions and random effects regressions to examine the social origin pay gap. Using a longitudinal dataset allows for the examination of pay over time and to better control for unobserved individual heterogeneity (Longhi and Nandi, 2015).

Whilst there has been research that has utilised longitudinal datasets in examining social mobility, few studies have examined the wages of individuals with identical levels of educational attainment in relation to their social origin over a long timeframe. For those who have, some limitations are identified. Crawford and van der Erve (2015) used a sample size of only 511, Anders examined wages 6 months and 3.5 years after graduation and Witteveen and Attewell's study was US focused. This chapter addresses these limitations as the UKHLS is a UK survey, provides data on individuals' pay over a greater time period, and provides us with a much larger sample size to examine class wage penalties.

The evidence in this chapter reveals pay gaps for those from routine social origins within educational attainment groups, such as degree holders, and within professional and managerial occupations. This is analogous with previous literature, however, an original aspect of this chapter is that it also examines pay gaps within intermediate and routine jobs. We find respondents from professional origins earn more in intermediate jobs but not in routine jobs. For instance, individuals from professional origins earn on average almost £1,900 more than those from routine and undefined social origins in intermediate jobs. However, those from professional, intermediate, and routine origins report similar earnings in routine jobs, with those from routine origins earning slightly more within these jobs. Given we do not observe a wage premium for those from professional origins in routine jobs this might add further weight to the importance of how other forms of 'capital' play a role in the workplace. For instance, as routine jobs are not associated with 'highbrow' culture and other factors that are synonymous with upper-class life, this may not advantage those from upper-class origins in these types of jobs. Thus, the results may indicate that such forms of 'capital' do not influence individuals' earnings within routine occupations. This may suggest those from professional origins have other resources they can draw upon which can

benefit them in intermediate jobs but not so in routine jobs. For respondents with undefined social origins, they receive on average more than £3,000 less in routine jobs in comparison to those with defined social origins. Therefore, respondents with undefined social origins report lower levels of pay than those with defined social origins in professional, intermediate, and routine jobs. This highlights that individuals from non-traditional/fragmented backgrounds are at a disadvantage in the labour market in terms of pay despite working in the same types of jobs. In addition, respondents with undefined social origins report the lowest levels of pay in all types of jobs, and not just in professional and managerial jobs.

When examining the pay gap cross-sectionally, we find that respondents from routine and undefined social origins experience a significant pay gap compared to those from upper-class origins. Following the dominance approach, we observe a significant pay gap for those with undefined social origins in eight of the nine waves, a significant pay gap for those from NS-SEC 5 and NS-SEC 6 origins in seven waves, and a significant pay gap for those from NS-SEC 4 origins in four waves. The pay gap is largest for those with undefined social origins in seven of the nine waves.

Furthermore, we find the pay gap varies over time. For instance, respondents with undefined social origins report the largest pay gap in wave 8 at 11.3%, and the lowest in wave 2, at 2.4%. For individuals from NS-SEC 6 origins, the pay gap ranges from 1.2% in wave 2 to 6.3% in wave 8. We also observe that the pay gap is significant for a larger number of social origin groups in the latter waves. These results highlight that the pay gap has been larger in more recent years than it was immediately after the 2008 recession. This may indicate that in more recent times there are an increasing number of factors at play which can impact individuals' level of pay, independent of their education. However, there are also time lag effects of recessions (Altonji et al., 2016), in some cases 8 to 10 years (Oreopoulos et al., 2006), and asserting exactly at what stage in the results these play out is difficult to disentangle. Thus, to combat any wave specific effects we also examine the pay gap longitudinally.

When doing so, we find the pay gap is largest for those with undefined social origins, at 11.7%, followed by those from NS-SEC 7 origins at 11.2%, when adopting the dominance approach. Another original aspect of this chapter is the estimation of pay gaps via proxies considering both parents' occupational status and both parents' education. When we use total parental occupation as a proxy for social origin, we observe that the pay gap is generally

larger for those from 'lower' social origins, particularly respondents whose parent(s) were economically inactive. This result supplements the findings from Chapter 2 in that individuals with undefined social origins report a larger pay gap compared to those with defined social origins. We also observe similar results when using parental education as a proxy for social origin in that those whose parents have lower levels of education report a larger pay gap. In addition, we observe significant pay gaps when we proxy for social origin using total parental education, and when considering respondents' highest parental occupational status and their parents' highest level of education i.e., those from more routine origins report a significant pay gap compared to those from upper-class origins.

This chapter offers a robust examination of the social origin pay gap by exploring the rich features of the UKHLS. This makes a valuable contribution to the social origin pay gap literature by providing empirical evidence of a social origin pay gap using a large-scale longitudinal UK household panel survey and a range of proxies for respondents' social origin. The evidence presented in this chapter challenges the argument that education is the great 'social leveller' as the results show that education, in and of itself, is insufficient to eradicate the class pay gap.

The chapter is structured as follows: section 3.1 provides a brief review of the current literature and outlines the gaps in the literature it aims to address. Section 3.2 explains the methodological approach and section 3.3 provides descriptive statistics of the sample. Section 3.4 reports the results from OLS regressions and random effects modelling and discusses the implications for the social origin pay gap, and section 3.5 concludes the chapter.

3.2.1 The dominance approach for social origin

Research on the social origin pay gap has developed through the convergence of income mobility research from economics and occupational mobility research from sociology, which examines the correlations of socio-economic status (SES) across generations. SES can be measured via a range of variables. When examining the SES correlation across generations, the social origin of the offspring is measured via the SES of the parents. Originally, mobility research focused on men and analysed father–son associations (Goldthorpe, 1983,1984). These studies typically apply the 'dominance approach', which takes the 'higher' occupational status of the mother or father (i.e., 'the breadwinner') as a proxy of the offspring's social origin. Traditionally, in most households the father has been

the 'breadwinner' and thus this method has been criticised as male centred (Thaning and Hällsten, 2020). However, with more women in work than ever before in the UK (ONS, 2021) and sources revealing that one quarter of mothers in working families are the 'breadwinners' (O'Connor, 2020), this method has been criticised for being somewhat outdated.

Although the dominance approach method is pervasive, recent research on evaluating measures of socio-economic background found scarce theoretical or empirical justification for its use (Thaning and Hällsten, 2020). The main limitation this chapter aims to explore is that the dominance approach omits the SES of the other parent, thus underestimating the 'totality' of the family's resources. Of course, not all individuals were living with both parents during their upbringing. However, a wealth of literature shows that social class – whether it be measured by parental education, parental occupation, and/or family income - has a statistically significant relationship with children's cognitive development (Sylva et al., 2010), exposure to poverty (Gioachin et al., 2023), and educational attainment (Hällsten and Thaning, 2018; Hout, 2018; Minello and Blossfeld, 2017). Research also highlights that both mothers' and fathers' SES characteristics are correlated with labour market outcomes (Ballarino et al., 2021; Erola et al., 2016; Korupp et al., 2002). Thaning and Hällsten (2020) suggested the education, occupations, and income of both parents can reinforce one another when both parents have high occupational status and high levels of income and education; similar arguments have been outlined in the assortative mating literature (Frémeaux and Lefranc, 2019; Greenwood et al., 2014). This implies a reinforcing style of intergenerational inequality, highlighting that an individual's mother *and* father's attributes can have complementary benefits for the offspring. This is pertinent to the social origin pay gap literature as the benefits of stemming from a 'higher' social origin have been clearly highlighted but may be underestimated by using information on the occupation of only one parent to capture the transmission of parental advantage. Thaning and Hällsten (2020) found that in their range of models proxying for social origin, the dominance approach performed poorer than other models of parental SES, with a bias of 4-6% for children's education and occupational outcomes. Previous studies have also found that omitting the 'non-dominant' parent can influence the total parental influence on the offspring's educational attainment and occupational status (Korupp et al., 2002). These results indicate that an individual's mother and father's occupation can influence the offspring and provide a more informed approach to understanding intergenerational transmissions. In light of the findings from Chapter 2, this may indicate that individuals whose both parents were unemployed, not living

with the respondent or deceased when the respondent was 14, may be further disadvantaged due to instability of their upbringings.

One way of testing the weaknesses of the dominance approach is to use a dataset that provides information on the attributes of both parents. The UKHLS is a suitable dataset for addressing this gap as it provides information on respondents' parents' occupation and education. This is invaluable information to further our understanding of social origin pay gaps as most social surveys only obtain information on the main wage earner i.e., the 'higher' occupational status of the respondent's mother and father. As for most respondents, their father's occupation is the 'highest', this results in information on the occupational status of most mothers being omitted from the analysis. For instance, in the LFS respondents are asked what the occupation of the main wage earner in the household when they were 14. In the LFS dataset used in Chapter 2, 72.8% of respondents identified their father as the main wage earner, whilst only 14.6% identified their mother as the main wage earner. Respondents who stated that their father was the main wage earner reported an average hourly pay of £15.04, whereas those who stated their mother was the main wage earner reported an average hourly pay of £13.37. This highlights two important points to consider for the analysis. Firstly, due to the low percentage of mothers being identified as the household main wage earner, we observe a clear disparity in data on parental occupation in the LFS, which can only be addressed through using a dataset that provides information on both parents' occupations, such as the UKHLS. Secondly, the hourly pay figures stated above highlight that for whom their mother was the main wage earner, on average, they earn less than respondents for whom their father was the main wage earner. This is one aspect of the social origin pay literature that has yet to be explored and highlights the importance of the intersection between sex and social class, but not disregarding that what is causing the pay gap for those who identify their mother as the main wage earner may be some other form of disadvantage. As we observe pay differences in relation to the sex of respondents' parents, this indicates that considering only the occupation of one parent may give misleading results.

3.2.2 Parental education

As well as providing information on parental occupation, the UKHLS provides information on respondents' parents' education, which has also been used as a proxy for social origin. Studies have found that parental education is correlated with offspring's life outcomes in several high-income countries. For instance, Triventi (2003) used a survey on European graduates in Germany, Italy, Norway, and Spain and found that those whose parents had

university education were far more likely to go on and secure a 'highly rewarded' occupation in Italy, Spain, and Norway. However, the authors found the effect of parental education was greater on occupational status than on wages. Altonji and Dunn (1996) used family fixed effects models to control for any unobservable family differences that might affect wages and found positive and significant effects of mother's education on the earnings of both males and females. More recently in terms of UK research, Friedman et al. (2017) recommended that the LFS could be significantly strengthened by including questions on parental education to provide a more comprehensive understanding of individuals' social origin. Therefore, the effect of parental education on occupational status and wages will be explored in this section.

3.2.3 Objectives

This chapter sets out to address the following objectives: firstly, to examine the impact of social origin indicators on pay gap estimates. This will be achieved through analysing the social origin pay gap at each wave (waves 1 to 9) through OLS regressions and estimating wage gaps using the pooled sample through random effects modelling. This allows for the examination of the pay gap at each wave and helps us identify whether it has increased or decreased over time, as well as for the examination of the pay gap longitudinally.

Secondly, it will explore whether total parental 'capital' at origin matters and compares this to the traditional 'dominance approach' used in the literature. The hypothesis here is that it is not just the 'capital' of the main earner that matters, but both. Both parents' education, occupation, income, resources, networks etc., all contribute to intergenerational transmissions. More specifically, those whose parents are both of a high occupational class are further advantaged through their parents' resources complementing one another. Conversely, those whose parents were both unemployed, not living with respondent, or deceased, are further disadvantaged due to the instability of their upbringing. By using information on both parents' occupational status and their education, this provides a more comprehensive proxy for individuals' social origins, which we use to estimate social origin pay gaps. If both hypotheses hold, these will further reinforce the impact of social origin on individuals' labour market outcomes.

3.3 Methodology

3.3.1 Data

The UKHLS started in 2009 and is the follow up study of the British Household Panel Study (BHPS). The UKHLS is the largest UK household longitudinal survey that tracks approximately 100,000 individuals across 40,000 households on an annual basis to see how their economic, social, and personal circumstances change over time (David and Sutton, 2011; Postel-Vinay and Sepahsalari, 2019).

The UKHLS asks questions annually to all individual inhabitants within the household over the age of 16, thus providing numerous individual interviews for households with more than one adult (Longhi and Nandi, 2015). Questions asked of participants include their highest level of education qualification, parental occupation, parental education, and various aspects of family life. The UKHLS provides a wealth of information on respondents' education, employment status, occupation, and various aspects of their social class background. Thus, the strength of UKHLS relative to administrative or labour market data is that it provides a far richer analysis of individuals' attributes and their social and economic circumstances.

The exploitation of the UKHLS allowed this thesis to benefit from the high methodological standards employed during the collection and preservation of the data (Lambert et al., 2007). The longitudinal nature of the UKHLS provides information on individuals' earnings and any changes in their personal circumstances over time and provides multiple proxies for social origin. This facilitates the analysis of whether the relationship between social origin and earnings changes over time (Crawford and van der Erve, 2015) and to what extent social origin pay gaps are moderated or exacerbated over time. For instance, Britton et al. (2019) found that the social origin wage premium increases with age. Thus, the UKHLS was utilised to further examine the relationship between social origin pay gaps and age due to the dataset's longitudinal nature.

In addition, Friedman and Laurison (2019) highlighted the need for longitudinal datasets to investigate whether the social origin pay gap has increased or decreased over time. The authors also affirmed that such analysis should aim to work with multiple measures of social origin. The UKHLS is a valuable dataset for addressing these recommendations as it follows individuals over time, thus tracking their earnings over an extended period of time. In addition, Jacob and Klein (2019) declared the need for more dynamic approaches and longitudinal research on the career progression of graduates to provide a more

comprehensive understanding of the latent factors that influence social class inequalities, to identify how and when these surface and whether they expand or diminish over time in one's life-course.

Furthermore, the use of longitudinal data combats cohort effects and difficulties in interpreting cross-sectional data regarding age, an issue highlighted in previous research (Erikson and Jonsson, 1998). Variation over time provides a greater insight than cross-sectional data, which only relates to one moment in time, and allows for the exploration of more issues than cross-sectional or time-series data (Kennedy, 2008). Given that emerging evidence suggests that wage patterns have changed substantially over time, the use of longitudinal data provides a greater approximation of lifecycle earnings than cross-sectional data. Thus, tracking individuals over time also allows us to better control for unobserved individual heterogeneity and better disentangle causality (Longhi and Nandi, 2015). Similarly, with panel data, we can model the heterogeneity and evaluate changes over time (Torres-Reyna, 2007). In addition, panel data allows for the controlling of variables that we cannot observe or measure, such as cultural factors or changes in employment practices in the labour market, and variables that change over time but not across entities, such as government policy and employment law.

The UKHLS dataset is comprised of a large General Population Sample (GPS) plus three other samples: the British Household Panel Survey (BHPS) sample, the Ethnic Minority Boost Sample (EMBS) and the Immigrant and Ethnic Minority Boost Sample (IEMBS).

- The General Population Sample (GPS): The GPS sample is comprised of two components. The first part is a clustered and stratified probability sample of approximately 24,000 households living in the UK in 2009-2010. The second element is a simple random sample of approximately 2,000 households living in Northern Ireland in 2009.

- The Ethnic Minority Boost Sample (EMBS): The EMBS sample is approximately 4,000 households chosen from areas of high ethnic minority concentration in 2009-2010. This sample was selected from a set of postal sectors that were viewed to have relatively high proportions of relevant ethnic minority groups based upon the 2001 Census data. The postal sectors selected covered around 35% of the postal sectors in

the UK and targeted between 82% and 93% of the population of the five target ethnic minority groups (Indian, Pakistani, Bangladeshi, Caribbean and African) (Lynn, 2009).

- The British Household Panel Survey (BHPS) sample: In Wave 2, around 8,000 households from the BHPS – the precursor to UKHLS – were included in the dataset. This sample was comprised of all members of the BHPS who were still 'active' in Wave 18 of the BHPS and had not refused approval to be part of the UKHLS sample. This means the full panel series, beginning in 1991, is maintained for researchers (Lynn, 2009).

- The Immigrant and Ethnic Minority Boost Sample (IEMBS) was added in wave 6 and contains around 2,900 households selected from areas of high ethnic minority concentration in 2015 where a minimum of one member was not born in the UK.

The UKHLS is constructed in waves, with each wave representing two calendar years, e.g., wave 1 contains data from 2009 to 2011, wave 2 includes data from 2010 to 2012 and so forth. Although this suggests an overlap in data collection, no repeated observations of individuals are included in the dataset. In this chapter, we use data from waves 1 to 9 (2009-2019).

Table 3.1: UKHLS Data Structure

Waves	Years
1	2009-2011
2	2010-2012
3	2011-2013
4	2012-2014
5	2013-2015
6	2014-2016
7	2015-2017
8	2016-2018
9	2017-2019

Chapter 2 highlighted the implications of item non-response for social origin in the LFS, suggesting previous pay gaps and the number of individuals affected may have been underestimated. However, an analysis of social origin wage estimates has yet to be explored with the UKHLS. Although the LFS is the largest employment survey in the UK and naturally provides a wealth of information on respondents' labour market characteristics, the

UKHLS has a more extensive range of variables on subjects such as education, family life and other socio-demographic characteristics that can facilitate a deeper and more long-term understanding of the social origin pay gap. There are many benefits to using the UKHLS to further our understanding of social origin pay gaps. For instance, the UKHLS follows respondents when they move address, thus capturing information on changes to individuals' circumstances over time, whereas the LFS does not as it is an address-based survey (ONS, 2023). The UKHLS also has fewer proxy[7] responses than the LFS, 8% compared to 30% respectively (Postel-Vinay and Sepahsalari, 2019). Furthermore, only the first interview of the LFS is carried out face-to-face and the other four interviews are by telephone, whereas all the UKHLS interviews were conducted face-to-face. Also, respondents are followed for a longer duration in the UKHLS, whereas this is limited to five consecutive quarters in the LFS, thus only 15 months.

3.3.2 Sample design for UKHLS

As statistical software programme assumes data has a simple random sample, to estimate standard errors correctly, the clustering primary sampling unit (w_psu) and the stratification variable (w_strata) was used in the analysis. A complex sample design was required to facilitate a wide range of analysis and ensure the various aims of the UKHLS were met (Lynn, 2009). Such aims include, but are not limited to, providing data representative of the total UK population, thus allowing researchers to examine the experiences of different sub-groups and ethnic minorities. Furthermore, simple random designs are often expensive to perform, particularly with face-to-face surveys as the sample selected may be comprised of sample units which are spread throughout the country requiring lengthy commutes for interviewees (Longhi and Nandi, 2015), such as the case for the UKHLS. Therefore, the UK element has a clustered design as the savings in the unit cost of data collection were determined to offset any subsequent effects of clustering (Lynn, 2009).

3.3.3 Weights

The UKHLS provides cross-sectional and longitudinal weights to ensure the data is representative of the UK population. These weights are designed to account for different probabilities of each individual being selected into the sample, for different probabilities of sample attrition, and to adjust for non-response (Postel-Vinay and Sepahsalari, 2019). The

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[7] Proxy responses refers to when a person cannot participate in the interview, someone else in the household (generally their spouse or partner or adult children) answers questions on their behalf, that is, by proxy. This questionnaire is a much shorter questionnaire asking factual information.

UKHLS is a much larger sample than the BHPS, but also has considerably less sample attrition given it began in 2009 (Kaminska and Lynn, 2010). Using data from waves 1 to 9 provides an extended timeframe to analyse the social origin pay gap, however there is a risk that the sample is affected by non-random attrition. In response to this, the relevant sample weights[8] were used throughout the analysis to ensure the estimates are unbiased. As the UKHLS is a probability survey with a complex design, STATA assumes the sample design is a simple random sample and thus all sub-groups are selected with equal selection probability and random attrition and non-response (West et al., 2018). Thus, estimates and standard errors produced using the UKHLS without using any weights may be biased. Furthermore, throughout the analysis, the subpop option was used. When subpopulation is used, only the cases defined in the subpopulation are used in the calculation of the estimate, but all cases are used in the calculation of the standard errors (West et al., 2008).

3.3.4 Variables

The dependent variable used in this chapter is paygu_dv, which is the derived variable for usual gross pay per month[9]: current job. UKHLS records self-reported total gross labour income per month measured in pound sterling. This measure includes overtime and any earnings from a second or third job but not income from a partner (Reeves and deVries, 2019). Respondents are asked, where possible, to verify their self-reported earnings to payslips and interviewers are instructed to probe for an approximate amount when a respondent cannot remember to mitigate item non-response (Fisher et al., 2019). This variable contains information on the earnings of those who are in paid employment, either full-time or part-time, thus those who are self-employed are excluded from the analysis. This variable is suitable for the analysis as this chapter focuses on how social origin affects individuals' pay in the workplace. For instance, social origin has been shown to influence individuals' outcomes in the hiring and recruitment process, both of which are linked to pay (Cook et al., 2012; Friedman and Laurison, 2019; Rivera, 2012). This does not mean that the income of the self-employed are not affected by class, but that they are arguably not affected via the same channels as the employed. Thus, we create a new variable called '*Pay*' which

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[8] We specify the clustering, weight, and stratification as follows: **svyset psu [pweight = i_indinus_lw], strata(strata) singleunit(scaled).** We use the longitudinal weight of **i_indinus_lw** as the last wave of data used is wave 9 (which corresponds with the letter '**i**'), '**ind**' corresponds to those aged 16+, '**in**' corresponds to interview, '**us**' corresponds to the combined GPS and EMBS from Wave 1 and '**_lw**' corresponds to longitudinal weight. For wave 1's analysis we use the weight '**a_indpxus_xw**'. In wave 2, the former BHPS was integrated into the UKHLS. Thus, in waves 2 to 6 we use the weight '**x_indpxub_xw**', with x denoting the wave. From waves 6 onwards, the UKHLS incorporated the IEMBS. Therefore, in waves 6 to 9 we use the weight '**x_indpxui_xw**', again with x denoting the wave.

[9] In the UKHLS all income receipts are converted to a monthly equivalent. For employee earnings, a usual amount from the employer is collected and the amount is converted to a monthly equivalent (Fisher et al., 2019).

is the derived variable for usual gross monthly pay: current job, excluding missing values. The mean gross monthly pay for the sample is £1,964.

Figure 3.1: Histogram of pay (dependent) variable
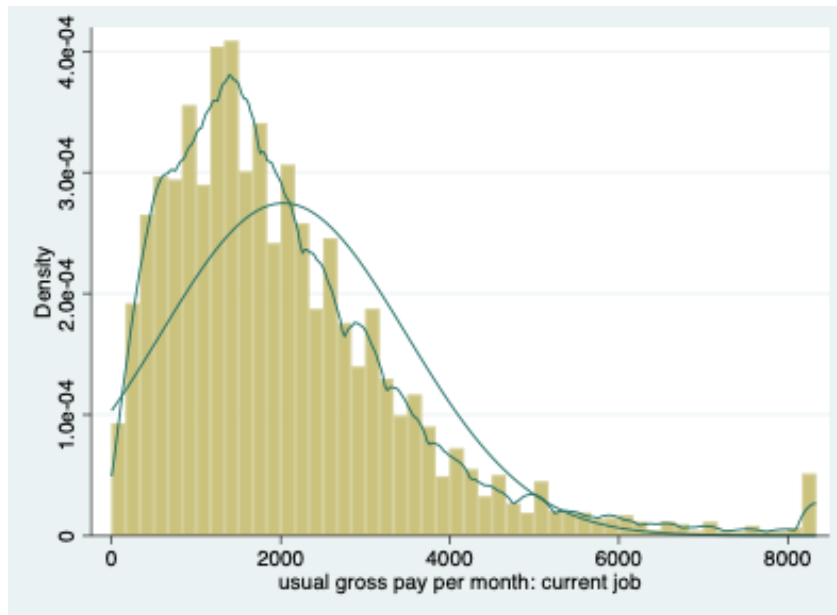
3.4 Descriptive statistics

3.4.1 Sample

The UKHLS team have compiled a file (xwavedat) for the analysis of individual response data that is available to download from the UK Data Service. This file contains the stable characteristics of survey respondents such as variables on identifiers, locality, demographic characteristics, socio-economic characteristics, individual and family background, and health. Several variables included in this file are relevant for the analysis and thus were selected and a 'Stable Characteristics' dataset was created. Variables included respondents' mother and father's activity status, and whom they were living with aged 14, why they were not living with their biological parents aged 16, school leaving age, the country respondents' parents were born in, and their highest educational qualification. Another dataset was then created with variables that were asked in all nine waves. These variables include mother and father's occupational status when respondent was aged 14, the respondent's highest education qualification, their gross monthly earnings, and a range of variables on their labour market characteristics such as whether the respondent works in a permanent or temporary job, their work sector, and whether they have managerial duties as part of their job. These two datasets were then merged by using respondents' personal identifier (pidp). The dataset

also includes other essential information that we control for in the regressions such as sex, country of residence, ethnicity, health etc.

In this chapter, we use the NS-SEC 8 and the NS-SEC 3 approach, both of which have their strengths and weaknesses. Although the NS-SEC 3 class is convenient for the purposes of analysis and is more straightforward to interpret, lumping individuals into three social origin groups can mask some of the differences between and within these groups. There is some evidence that suggests the absolute amount of inequality is increasing between big classes, between the occupations constituting these big classes, and within occupations (Weeden et al., 2007). Thus, we also use the NS-SEC 8 class to provide a more granular analysis of social origin, which allows us to observe the differences across social origin groups more closely. Here, both forms of NS-SEC classification are utilised as both are useful for the purposes of the analysis. Table 3.2 provides an example of some of the occupations for each NS-SEC group.

Table 3.2: NS-SEC 8 classification

NS-SEC class	Examples of occupations
NS-SEC 1: Large employers and higher managerial and professional occupations	Directors of major organisations; senior civil servants; clergy; medical practitioners; engineers
NS-SEC 2: Lower managerial and professional occupations	Journalists, newspaper editors, musicians, nurses, paramedics, school teachers
NS-SEC 3: Intermediate occupations	Graphic designers, medical secretaries, ambulance staff
NS-SEC 4: Small employers and own account workers	Farmers, carpenters, hairdressers, taxi drivers
NS-SEC 5: Lower supervisory and technical occupations	Bakers, electricians, road construction operatives
NS-SEC 6: Semi-routine occupations	Dental nurses; farm workers, housekeepers
NS-SEC 7: Routine occupations	Cleaners, domestics, labourer, waiter
NS-SEC 8: Never worked and long term unemployed	

(source: Office for National Statistics, 2021)

Table 3.3 presents the analytical sample from waves 1 to 9 (2009-2019) of the UKHLS. As discussed above, the main independent variable of interest is social origin, which is proxied through the 'higher' of respondents' mother and father's occupation when the respondent was 14. This resulted in an analytical sample of 168,878. Table 3.3 presents the sample in the form of the NS-SEC 8 class and Table 3.4 presents the sample in the form of the NS-SEC 3 class.

Table 3.3: Respondents' social origin (NS-SEC 8 class)

Higher of respondents' mother and father's occupation aged 14	Freq.	Percent	Cum.
NS-SEC 1: Higher management & professional	20,530	12.2	12.2
NS-SEC 2: Lower management & professional	29,216	17.3	29.5
NS-SEC 3: Intermediate	21,193	12.6	42.1
NS-SEC 4: Small employers & own account	18,202	10.8	52.9
NS-SEC 5: Lower supervisory & technical	12,384	7.3	60.2
NS-SEC 6: Semi-routine	20,764	12.3	72.5
NS-SEC 7: Routine	17,237	10.2	82.7
Undefined: Not working/deceased/not living with respondent	29,352	17.4	100
Total	168,878	100	

To achieve the NS-SEC 3 classification, we follow the common approach in the literature and collapse the NS-SEC 8 class variable. For instance, those from NS-SEC 1 and 2 origins are recoded to 'professional' origins, those from NS-SEC 3 and 4 origins are recoded to 'intermediate' origins and those from NS-SEC 5 to NS-SEC 7 origins are recoded to 'routine' origins. We also refer to respondents from 'professional' origins as those from upper-class origins, respondents from 'intermediate' origins as those from lower-middle class origins, and respondents from 'routine' origins as those from working-class origins. Respondents whose mother or father's 'higher' occupational status was 'not working/deceased/not living with respondent' are recoded to 'undefined social origins', in line with Chapter 2's analysis. This allows us to compare the observable traits of those with undefined and defined social origins. Whilst Table 3.4 includes four social origin 'groups', we will use the term the NS-SEC 3 class throughout in line with previous literature.

Table 3.4: Respondents' social origin (NS-SEC 3 class)

Respondents' social origin (NS-SEC 3 class)	Freq.	Percent	Cum.
Professional origins	49,746	29.5	29.5
Intermediate origins	39,395	23.3	52.8
Routine origins	50,385	29.8	82.62
Undefined origins	29,352	17.4	100
Total	168,878	100	

Table 3.5 provides an overview of respondents' observable traits by social origin, comparing those with reported (defined) social origins and those with undefined social origins. Table 3.4 table includes information on respondents' demographics, their educational attainment (those who have no qualifications and degree holders for simplicity), and several key labour market observables such as if the respondent is in work, holds a permanent job, works in a higher and lower professional and managerial occupation, and their level of pay. We see that all differences between respondents with defined and undefined social origins, except for sex, are statistically significant. This indicates that, on average, the life outcomes of those with undefined social origins are much worse in comparison to those with defined social

origins. Thus, the results suggest there is some form of social and economic disadvantage of stemming from a 'non-traditional' background.

Table 3.5: Observable attributes of respondents by social origin, defined and undefined

	Defined social origin		Undefined social origin		
	N	Mean	N	Mean	diff
Age	23,551	41.13	3,807	43.7	-2.572 ***
Sex (male)	23,551	0.45	3,807	0.44	0.008
Visible minority	23,551	0.21	3,807	0.28	-0.071 ***
Reported long-term illness	23,551	0.29	3,807	0.34	-0.051 ***
No qualifications	23,084	0.05	3,713	0.10	-0.049 ***
Degree	23,084	0.32	3,713	0.23	0.085 ***
In work	23,551	0.63	3,807	0.57	0.061 ***
Permanent job	23,551	0.66	3,807	0.59	0.066 ***
Occupational status: NS-SEC 1	16,512	0.13	2,372	0.10	0.034 ***
Occupational status: NS-SEC 2	16,512	0.31	2,372	0.26	0.048 ***
Pay	14,697	£2,136	2,085	£1,960	177 ***

Table 3.6 provides an overview of respondents' observable traits by their social origin using the NS-SEC 3 class approach. Whilst we use the NS-SEC 8 class approach in subsequent tables, the NS-SEC 3 class approach is used here for simplicity of presentation and interpretation, and to firstly provide a broad overview of respondents' observable characteristics in relation to their social origin.

We observe significant differences across these four social origin groups. Those with undefined social origins are younger on average, more likely to be female, less likely to hold a degree, more likely to report having no qualifications, and are less likely to work in a professional and managerial job. Furthermore, on average, they earn less than all other social origin groups and report lower returns to their degree than those from professional and intermediate origins. Those with undefined social origins are also less likely to work in a salaried occupation, less likely to hold managerial duties in their job, and are less likely to work in the largest firms. Whilst those with undefined social origins report the worse outcomes for most categories in Table 3.6, we also see those from routine origins report the worse outcome for some categories. For example, respondents from routine origins are more likely to leave school at a younger age, report the lowest returns to their degree and the lowest level of pay within higher and lower managerial and professional jobs. Overall, respondents with undefined social origins report, on average, the worse life outcomes. Subsequent tables use the NS-SEC 8 class approach to provide a more in-depth analysis of respondents' observable traits by social origin.

Table 3.6: Observable attributes of respondents by social origin (NS-SEC 3 class)

	Professional origins (n=49,746)	Intermediate origins (n=39,395)	Routine origins (n=50,385)	Undefined origins (n=29,352)
Demographics				
Age	40.2	42.5	44.6	38.8
Sex - females	52.8%	52.1%	51.9%	59.9%
Education				
School leaving age	16.9	16.5	16.1	16.2
Degree holders	46.5%	27.6%	16.6%	13.6%
No qualifications	2.2%	6.4%	11.7%	15.4%
Labour market observables				
NS-SEC 1 job	21.1%	12.7%	9.9%	6.1%
NS-SEC 2 job	37.6%	31.1%	25.8%	21.5%
Gross monthly pay	£2,360	£1,977	£1,787	£1,479
Gross monthly pay by degree holder	£2,986	£2,673	£2,557	£2,624
Gross monthly pay in NS-SEC 1	£3,848	£3,427	£3,264	£3,484
Gross monthly pay in NS-SEC 2	£2,613	£2,448	£2,279	£2,380
Paid by salary	73.7%	65.2%	55.7%	46.9%
Managerial duties	29.9%	21.9%	18.8%	12.6%
Firm size more than 500	16.4%	13%	10.6%	7.5%

3.4.2 Social origin and educational attainment

Table 3.7 provides a further breakdown of educational attainment by social origin using the NS-SEC 8 approach. 56% of those from NS-SEC 1 (higher managerial and professional) origins report a degree as their highest educational qualification and only one per cent report having no qualifications. Those from NS-SEC 1 origins also report higher levels of education than those from NS-SEC 2 origins. 16% of those from NS-SEC 7 (routine) origins report a degree as their highest level of education and almost 15% report having no qualifications. For those with undefined social origins, over 20% report holding a degree and 12% report having no qualifications. The highest levels of education for those from professional and intermediate origins is a degree, whereas the highest levels of education for those from routine and undefined social origins is General Certificate of Secondary Education (GCSE) level.

Across all social origin groups, those from NS-SEC 1 origins report the highest percentage of degree holders and lowest percentage of those having no qualifications. On the other hand, those from NS-SEC 7 origins report the lowest percentage of degree holders and those with undefined social origins report the highest percentage having no qualifications. For respondents reporting no qualifications we see that this is linear in the sense that the

percentage increases with each social origin group – professional, intermediate, routine, undefined.

Table 3.7: Social origin and educational attainment

Higher of respondent's mother and father's occupation aged 14	Respondent's highest qualification ever reported						
	Degree	Other higher	A level etc.	GCSE etc.	Other qualifications	No qualifications	Total
NS-SEC 1	11,429	27,37	3,398	1,903	640	254	20,361
	56.1%	**13.4%**	**16.7%**	**9.35%**	**3.1%**	**1.3%**	**100%**
NS-SEC 2	13,087	3,985	5,766	42,00	1,201	709	28,948
	45.2%	**13.8%**	**19.9%**	**14.5%**	**4.2%**	**2.5%**	**100%**
NS-SEC 3	7,184	3,204	4,744	4,068	1,091	652	20,943
	34.3%	**15.3%**	**22.7%**	**19.4%**	**5.2%**	**3.1%**	**100%**
NS-SEC 4	4,410	2,329	3,589	4,077	1,685	1,764	17,854
	24.7%	**13%**	**20.1%**	**22.8%**	**9.4%**	**9.9%**	**100%**
NS-SEC 5	2,808	1,703	2,844	2,736	1,331	825	12,247
	22.9%	**13.9%**	**23.2%**	**22.3%**	**10.9%**	**6.7%**	**100%**
NS-SEC 6	3,883	2,492	4,680	5,172	2,282	2,106	20,615
	18.8%	**12.1%**	**22.7%**	**25.1%**	**11.1%**	**10.2%**	**100%**
NS-SEC 7	2,770	1,937	3,291	4,406	2,135	2,506	17,045
	16.3%	**11.4%**	**19.3%**	**25.9%**	**12.5%**	**14.7%**	**100%**
Undefined	5,978	2,771	6,424	7,394	2,793	3,598	28,958
	20.6%	**9.6%**	**22.2%**	**25.5%**	**9.7%**	**12.4%**	**100%**
Total	51,549	21,158	34,736	33,956	13,158	12,414	166,971
	30.9%	**12.7%**	**20.8%**	**20.3%**	**7.9%**	**7.4%**	**100%**

3.4.3 Social origin and returns to education

Table 3.8 shows the returns to education by social origin using the NS-SEC 8 approach, allowing us to observe the earnings for each educational qualification across all social origin groups. Table 3.8 shows that overall, those from NS-SEC 1 origins report, on average, the highest returns to their education and those from NS-SEC 7 origins report the lowest returns. Degree holders from NS-SEC 1 origins also report considerably higher returns than those from NS-SEC 2 origins. For instance, degree holders from NS-SEC 1 origins earn just over £2,400 more per annum than degree holders from NS-SEC 2 origins and almost £7,300 more than those from NS-SEC 7 origins. Interestingly, it is those from NS-SEC 4 origins (self-employed) who report the lowest returns to their degree. Although the results highlight a graduate wage premium, the data does not say anything about degree 'quality'. For instance, individuals from upper-class backgrounds are more likely to attend Russell-Group universities, where the pay for graduates is higher, thus it is reasonable to state that social origin is correlated with degree 'quality'. Thus, further testing is needing which also considers respondents' labour market features to gain a better understanding of the factors driving the pay discrepancies among equally qualified individuals from different social class backgrounds.

Table 3.8 also shows that respondents from NS-SEC 1 origins report the highest returns to their education for 'other higher degree[10]', A-levels, and GCSE level. Thus, for all school leavers, those from higher professional and managerial origins still report the highest return to their education. For example, respondents from NS-SEC 1 origins with A-levels earn on average almost £3,200 more than respondents with undefined social origins with A-levels. Moreover, respondents from NS-SEC 1 origins with GCSEs earn on average over £4,400 more than respondents with undefined social origins with GCSEs. This highlights a large variation of pay even amongst school leavers. However, the UKHLS does not provide us with information on respondents' grades, but only their educational levels. For instance, an individual from NS-SEC 1 origins may have on average higher grades than a person from NS-SEC 7 origins due to a variety of factors, which may influence the differences in pay here.

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[10] Following the Understanding Society User Support Forum (https://iserredex.essex.ac.uk/support/projects/support) and the Government Statistics Service Harmonised Principle for educational attainment (https://analysisfunction.civilservice.gov.uk/policy-store/educational-attainment/) we consider other higher degree as a qualification 'lower' than a Bachelor's degree.

This section has explored the returns to education, showing degree holders from professional origins enjoy higher returns to their education. However, this does not consider the occupational status of respondents, and we know from previous results respondents from upper-class origin are more likely to work in professional and managerial occupations, where wages are higher. Therefore, the next section examines social origin and occupational status to provide a more informed understanding of the factors driving the social origin pay gap.

Table 3.8: Returns to education by respondents' social origin (NS-SEC 8 class)

Respondent's highest qualification ever reported	Higher of respondent's mother and father's occupation aged 14								Total
	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined	Total
Degree	£3,094	£2,893	£2,793	£2,464	£2,668	£2,535	£2,486	£2,625	£2,797
Other higher degree	£2,247	£1,997	£2,108	£1,986	£1,947	£1,984	£1,923	£1,973	£2,029
A level etc.	£1,929	£1,748	£1,823	£1,672	£1,735	£1,710	£1,708	£1,663	£1,745
GCSE etc.	£1,758	£1,667	£1,524	£1,381	£1,552	£1,523	£1,464	£1,390	£1,509
Other qualifications	£1,700	£1,577	£1,745	£1,520	£1,609	£1,483	£1,430	£1,356	£1,510
No qualifications	£1,065	£1,592	£1,359	£1,088	£1,175	£1,142	£1,056	£1,081	£1,142
Total	£2,646	£2,325	£2,173	£1,845	£1,917	£1,838	£1,749	£1,835	£2,080

3.4.4 Social origin and occupational status

Table 3.9 uses the NS-SEC 8 class approach to examine respondents' occupational status in relation to their social origin. Overall, we observe strong signs of class reproduction in the UK labour market. For example, over a quarter of those from higher managerial and professional origins work in similar jobs to their parents, whereas only seven per cent of those from routine origins work in NS-SEC 1 jobs. 13.8% of the sample work in higher managerial and professional jobs, which highlights that those from NS-SEC 1 origins are over-represented and those from NS-SEC 7 origins are under-represented in higher managerial and professional jobs. We observe similar results in lower managerial and professional jobs (NS-SEC 2). 30.3% of the sample currently work in lower managerial and professional jobs, whereas almost 38% of those from NS-SEC 1 origins and a quarter of those from NS-SEC 7 and undefined social origins work in NS-SEC 2 jobs.

In contrast, 3.5% of those from higher managerial and professional origins work in routine jobs, the lowest percentage of all social origin groups, whereas 14% of those from routine origins work in similar jobs to their parents. 8.7% of the sample work in routine jobs, highlighting that those from NS-SEC 7 origins are over-represented and those from NS-SEC 1 origins are under-represented in routine jobs. For those with undefined social origins, the occupational status of this group compared to those from NS-SEC 7 origins are broadly similar although a lower percentage of those from NS-SEC 7 origins work in NS-SEC 1 jobs. Additionally, the percentage levels of those from NS-SEC 4 origins in professional and managerial jobs is similar to those with undefined social origins. Coupled with the results we observed in Table 3.8 on the returns to education, this may indicate there is some form of disadvantage associated with coming from NS-SEC 4 (self-employed) origins. Although, the self-employed is quite a large category and covers the very rich (e.g. Partners in law and accountancy firms) to the very poor, in many industries nearly all workers are self-employed, many of which are low paid and fairly precarious e.g. construction, taxi drivers etc.

Overall, we observe a clear relationship between social origin and occupational status. Those from professional and managerial origins are more likely to go on and work in professional and managerial jobs themselves and are less likely to work in routine jobs, whereas those from routine origins are more likely to work in routine jobs and least likely to work in professional jobs. For those in paid employment, the type of job they do determines their level of income. Thus, if those from 'higher' social origins are over-represented in the

highest paying jobs, it would be reasonable to hypothesize they earn higher wages than those from 'lower' social origins.

Table 3.9: Respondents' occupational status by social origin

	Social origin	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Total
Occupational status	NS-SEC 1	4,209	6,134	1,954	1,236	668	1,410	557	16,168
		26%	**38%**	**12.1%**	**7.6%**	**4.1%**	**8.7%**	**3.5%**	**100%**
	NS-SEC 2	3,965	8,429	3,170	1,815	1,266	2,749	1172	22,566
		17.6%	**37.4%**	**14%**	**8%**	**5.6%**	**12.2%**	**5.2%**	**100%**
	NS-SEC 3	2,391	5,687	2,671	1,334	986	2,303	909	16,281
		14.7%	**34.9%**	**16.4%**	**8.2%**	**6.1%**	**14.1%**	**5.6%**	**100%**
	NS-SEC 4	1,316	3,416	1,797	1,959	931	2,403	1,169	12,991
		10.1%	**26.3%**	**13.8%**	**15.1%**	**7.2%**	**18.5%**	**9%**	**100%**
	NS-SEC 5	1,035	2,460	1,283	840	829	1,747	927	9,121
		11.3%	**27%**	**14.1%**	**9.2%**	**9.1%**	**19.1%**	**10.2%**	**100%**
	NS-SEC 6	1,591	3,725	1,875	1,308	1,327	3,118	1,675	14,619
		10.9%	**25.5%**	**12.8%**	**8.9%**	**9%**	**21.3%**	**11.5%**	**100%**
	NS-SEC 7	831	2,855	1,476	1,049	1,097	2,412	1,610	11,330
		7.3%	**25.2%**	**13%**	**9.3%**	**9.7%**	**21.3%**	**14.2%**	**100%**
	Undefined	1,987	4,779	2,592	1,826	1,330	3,859	2,071	18,444
		10.8%	**25.9%**	**14.1%**	**9.9%**	**7.2%**	**20.9%**	**11.2%**	**100%**
	Total	17,325	37,485	16,818	11,367	8,434	20,001	10,090	121,520
		14.3%	**30.9%**	**13.8%**	**9.3%**	**6.9%**	**16.5%**	**8.3%**	**100%**

3.4.5 Social origin and pay

Table 3.10 examines wages in relation to respondents' social origin. Firstly, we look at gross monthly pay[11] and then consider pay within higher and lower professional and managerial occupations (NS-SEC 1 and 2). The first row shows that respondents from professional origins earn on average almost £4,500 more than those from intermediate origins and £6,876 more than those from routine origins, per annum. However, as shown above, those from professional origins are more likely to hold a degree and work in these types of jobs. Thus, to account for occupational status we examine the mean pay levels within occupation groups. In particular, we focus on managerial and professional jobs due to the existing body of evidence that finds a social origin pay gap within these types of jobs.

Previous research highlights deficiencies in using both 'big-class' and 'micro-class' approaches as their scope of analysis is limited to occupational entry (Friedman and Laurison, 2017; Laurison and Friedman, 2016). As such, social mobility literature often overlooks that whilst working-class individuals may obtain entry to these 'top jobs', they do not enter such jobs with the same level of resources and therefore do not go on to obtain similar levels of earnings or success (Ashley et al., 2015; Friedman, 2015; Friedman and Laurison, 2017; Hansen, 2001). This indicates that social origin may still have an influential role in the labour market in terms of individuals' earnings and progression.

Table 3.10 shows that those from professional origins earn considerably more than those from intermediate and routine origins in NS-SEC 1 and NS-SEC 2 jobs. For example, those from professional origins earn, on average, £7,000 more than those from routine origins, and £5,000 more than those from intermediate origins in NS-SEC 1 jobs, per annum. Furthermore, those from professional origins earn, on average, £4,000 more than those from routine origins, and almost £2,000 more than those from intermediate origins and undefined social in NS-SEC 2 jobs, per annum. The pay gap is largest for respondents from routine origins in professional and managerial jobs.

Therefore, the social origin pay gap is larger in higher managerial and professional jobs than it is in lower managerial and professional jobs. This seems logical as NS-SEC 1 jobs are

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[11] It is important to note that the average gross monthly pay in the sample is lower than today's wages due to the sample consisting of reported wages from 2009 to 2019 and including those engaged in full-time and part-time employment.

generally regarded as more 'elite' and it is within these occupations that individuals from the most affluent origins can best exploit their resources, such as their social networks and cultural capital, to increase their chances of promotions and wage rises (Ashley and Empson, 2017; Ashley et al., 2015; Cook et al., 2012; Friedman and Laurison, 2019; Rivera, 2012). Moreover, in the dataset we observe that those from the professional origins are over-represented within these NS-SEC 1 jobs, which may lend further support to the argument that many aspects within these 'elite' jobs are associated with upper class life. However, it must also be acknowledged that pay is higher in NS-SEC 1 jobs than NS-SEC 2 jobs, thus naturally we would expect greater variance of pay in NS-SEC 1 jobs.

Table 3.10: Social origin and pay (gross monthly pay)

Gross monthly pay	mean	Professional origins	Intermediate origins	Routine origins	Undefined origins
Gross monthly pay	£2,031	£2,360	£1,977	£1,787	£1,479
Gross monthly pay in NS-SEC 1 jobs	£3,571	£3,848	£3,427	£3,264	£3,484
Gross monthly pay in NS-SEC 2 jobs	£2,445	£2,613	£2,448	£2,279	£2,380

Most of the literature on the social origin pay gap has focused on pay gaps within professional and managerial jobs, but what has yet to be explored is whether we also observe pay gaps in other types of jobs. The next sub-section looks at pay across professional, intermediate, and routine jobs to examine if similar pay gaps exist outwith professional and managerial jobs.

Table 3.11: Social origin and occupational status (gross monthly pay)

Gross monthly pay	Social origin	Professional origins	Intermediate origins	Routine origins	Undefined origins
Occupational status	Professional job	£3,000	£2,659	£2,478	£2,264
	Intermediate job	£1,734	£1,648	£1,578	£1,572
	Routine job	£1,329	£1,322	£1,342	£1,056

Table 3.11 shows that respondents from professional origins earn more than those from intermediate, routine, and undefined social origins in intermediate jobs. For instance, those from

professional origins earn on average almost £1,900 more than those from routine and undefined social origins in intermediate jobs. The pay difference is not as large in comparison to professional jobs, which is to be expected given the variance of pay within intermediate jobs are not as large as the variance within managerial and professional jobs.

Furthermore, respondents from professional, intermediate, and routine origins report similar earnings in routine jobs, with those from routine origins reporting the highest levels of pay within these jobs. Given we do not observe a wage premium for those from professional origins in routine jobs this may indicate that other forms of 'capital' do not play a role within these jobs. It may also suggest those from professional origins have other resources they can draw upon which can benefit them in intermediate jobs but not so in routine jobs. However, this result may be explained by the lower levels of variance of pay in routine jobs and thus the earnings 'ceiling' in these jobs is lower.

Overall, respondents with undefined social origins report the lowest levels of pay in professional, intermediate, and routine jobs. This highlights that individuals from non-traditional/fragmented backgrounds are at a disadvantage in the labour market in terms of pay, but of course does not control for any of their personal attributes.

3.5 One and both parents NS-SEC 1

The social origin pay gap literature highlights that individuals from 'higher' social origins are advantaged over others due to the resources they inherit through their family, such as parental income, education, networks etc. and the attributes that are transmitted to them during their upbringing. However, what if this transmission of advantage was underestimated by considering only the occupation of one parent? One of the strengths of using the UKHLS for research on the social origin pay gap is that the dataset provides information on the occupation of respondents' mother and father when they were 14, and not just the 'higher' of the two as most social surveys do. This allows for the examination of how both parents' occupational status and other forms of advantage this may bestow, such as education and income, can influence their offspring's life outcomes, giving us a greater understanding of the 'long shadow' of social origin.

This is particularly useful when thinking about the transmissions of advantage for individuals whose parents held professional and managerial jobs and can thus provide a more informed analysis over the dominance approach. For instance, when using the dominance approach only the 'higher' occupational status of respondents' parents is considered. If a respondent's father held a higher managerial and professional occupation but their mother held a NS-SEC 7 job, the respondent would be classified as stemming from NS-SEC 1 origins.

Similarly, if a respondent's *both* parents held a higher managerial and professional job then they too would be categorised as stemming from NS-SEC 1 origins. However, in this example, although both respondents would be categorised with the same NS-SEC social origin, their parents' education, income, resources, and networks would differ considerably. Therefore, we hypothesis that those whose *both* parents held NS-SEC 1 jobs when they were 14 would inherit more resources that would further advantage them over others in the labour market.

Table 3.12 provides a crosstab of respondents' father and mother's NS-SEC when they were 14. The table shows that 6.2% of the sample's mother and father both held NS-SEC 1 jobs. For 22.9% of the sample, their father held a NS-SEC 1 job and their mother held a NS-SEC 2 job. This highlights that almost 30% of those whose father held a NS-SEC 1 job, their mother also held some form of a managerial and professional job; these are measures of the extent of assortative mating in the sample. However, on the other hand, it also highlights that for 70% of the sample, those whose father held a NS-SEC 1 job their mother did not hold a managerial or professional job. For instance, for those whose father held a NS-SEC 1 job, almost 38.4% of their mothers were either not working, deceased, or not living with the respondent. This highlights the importance of considering a proxy for social origin that captures the occupational status of both parents, as in most cases the NS-SEC of the mother and father are considerably different. This allows for the exploration of the hypothesis that the totality of parental resources would be much greater for the 6.2% of respondents whose both parents worked in NS-SEC 1 jobs, as opposed to just one.

Table 3.12: Respondents' Mother and Father's Occupation aged 14

Father's NS-SEC respondent aged 14	Mother's NS-SEC respondent aged 14								
	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined	Total
NS-SEC 1	1,140	4,222	2,843	598	85	1,788	672	7,074	18,422
	6.2%	**22.9%**	**15.4%**	**3.2%**	**0.5%**	**9.7%**	**3.7%**	**38.4%**	**100%**
NS-SEC 2	625	4,750	2,968	552	104	2,487	1,161	6,941	19,588
	3.2%	**24.3%**	**15.2%**	**2.8%**	**0.5%**	**12.7%**	**5.9%**	**35.4%**	**100%**
NS-SEC 3	232	2,041	2,602	430	70	2,202	1,094	4,474	13,145
	1.8%	**15.5%**	**19.8%**	**3.3%**	**0.5%**	**16.8%**	**8.3%**	**34%**	**100%**
NS-SEC 4	278	1,607	1,840	1,778	55	3,433	2,335	8,380	19,706
	1.4%	**8.2%**	**9.3%**	**9%**	**0.3%**	**17.4%**	**11.9%**	**42.5%**	**100%**
NS-SEC 5	219	1,348	2,534	417	289	3,335	2,878	5,220	16,240
	1.4%	**8.3%**	**15.6%**	**2.6%**	**1.8%**	**20.5%**	**17.7%**	**32.1%**	**100%**
NS-SEC 6	106	1,276	1,850	342	114	3,428	3,241	5,784	16,141
	0.7%	**7.9%**	**11.5%**	**2.1%**	**0.7%**	**21.2%**	**20.1%**	**35.8%**	**100%**
NS-SEC 7	94	1,307	1,739	354	154	4,318	5,462	7,886	21,314
	0.4%	**6.1%**	**8.2%**	**1.7%**	**0.7%**	**20.3%**	**25.6%**	**37%**	**100%**
Undefined	156	1,611	1,576	603	90	2,813	2,826	13,083	22,758
	0.7%	**7.1%**	**6.9%**	**2.6%**	**0.4%**	**12.4%**	**12.4%**	**57.5%**	**100%**
Total	2,850	18,162	17,952	5,074	961	23,804	19,669	58,842	147,314
	1.9%	**12.3%**	**12.2%**	**3.44**	**0.65**	**16.16**	**13.35**	**39.94**	**100%**

Table 3.13 below compares the attributes of respondents who had one parent working in a NS-SEC 1 job to those whose both parents worked in NS-SEC 1 jobs. This can shed some light on whether individuals whose parents held NS-SEC 1 jobs are further advantaged compared to individuals who only one parent worked in a NS-SEC 1 job, thus potentially providing further insight into the levels of advantage transmitted through coming from an upper-class background. However, it is also important to note that the sample size for those whose parents held NS-SEC 1 jobs is much lower to those who only one parent held a NS-SEC 1 job. This is to be expected given the probability of both parents working in such jobs is small. Given the level of privilege often associated with coming from higher managerial and professional origins, this indicates we may be dealing with a small, advantaged group.

Table 3.13: Comparing observable attributes of respondents with one and both parents working in NS-SEC 1 jobs

	One parent held NS-SEC 1 job (n=20,530)	Both parents held NS-SEC 1 job (n=1,140)
Demographics		
Age	40.5	38.7
Sex - females	50%	45.6%
Education		
Father university degree	42.1%	76.1%
Father did not go to school	0%	0%
Mother university degree	26.1%	68.2%
Mother did not go to school	0.8%	0%
School leaving age	17.1	17.7
Degree holders	53.3%	70.1%
No qualifications	1.5%	0%
Labour market observables		
NS-SEC 1 - Higher man & prof job	25.7%	25%
NS-SEC 2 - Lower man & prof job	35.2%	38%
Gross monthly pay	£2,560	£3,169
Gross monthly pay by degree holder	£3,093	£3,482
Gross monthly pay in NS-SEC 1	£3,940	£4,609
Gross monthly pay in NS-SEC 2	£2,653	£2,784
Paid by salary	77.6%	86.3%
Managerial duties	33.3%	41.6%
Firm size more than 500	82%	75.6%

3.5.1 Educational attainment and occupational status

We observe considerable differences in educational attainment between the two groups. For instance, 53.3% of those who one parent held a NS-SEC 1 job report a degree as their highest level of education, whereas 70.1% of those whose parents held NS-SEC 1 jobs are degree holders. Moreover, for respondents who had one parent working in a NS-SEC 1 job, 1.5% report having no qualifications, whereas this figure is zero for whom both parents held NS-SEC 1 jobs. These results highlight that respondents whose both parents worked in NS-SEC 1 jobs are more likely to obtain degrees and less likely to obtain no qualifications in comparison to those who only one parent held a NS-SEC 1 job. This suggests those whose parents held NS-SEC 1 jobs may enjoy additional endowments that can assist them in their education, over and above for whom one parent worked in a NS-SEC 1 job, thus highlighting the importance of the totality of parental resources.

However, we do not observe significant differences in relation to occupational attainment. For instance, a quarter of both groups work in NS-SEC 1 jobs with those whose parents held NS-SEC 1 jobs being slightly more likely to work in NS-SEC 2 jobs. This indicates that whether one or both parents held NS-SEC 1 jobs does not have a strong impact on the likelihood of a respondent also working in a professional or managerial job. Next, we turn our attention to pay and consider if the occupational status of both parents for those from NS-SEC 1 origins differs from when we consider the occupational status of just one parent.

3.5.2 Pay and returns to education

Firstly, as a reference point, we restate the mean gross monthly pay for all respondents in the sample, which is £1,964. The mean gross monthly pay for respondents for whom only one parent held a NS-SEC 1 job is £2,560, whereas it is £3,169 for whom both parents held NS-SEC 1 jobs. This highlights that, on average, those whose parents held NS-SEC 1 jobs are financially better off than those who only had one parent working in a NS-SEC 1 job. However, this does not account for educational attainment or the type of jobs these respondents work in. As shown above those from whose both parents held NS-SEC 1 jobs are more likely to hold degrees. Thus, next we compare the returns to education and then pay within managerial and professional jobs across these two social origin groups.

We observe considerable differences in returns to education. The returns to a degree for those whose parents held NS-SEC 1 jobs is £3,482, and £3,093 for those who only one parent held a NS-SEC 1 job. This is a considerable difference given we are comparing individuals who hold university levels of education and come from professional and managerial origins. This highlights degree holders where both parents held higher managerial and professional jobs enjoy higher returns to their education compared to those who had only one parent working in a similar job. Although the odds of attending a Russell-Group university may not be significantly different between these two groups, as they both could be classified as 'upper-class', degree 'quality' and degree classification may play a role here; potentially more so the latter given the differences in educational attainment that we observe.

3.5.3 Pay within professional and managerial jobs

For those whose parents held NS-SEC 1 jobs, they report a mean pay of £4,609, and those who had only one parent working in a NS-SEC 1 job report a mean pay of £3,940 in higher professional and managerial occupations. We observe similar results in NS-SEC 2 jobs. For instance, those whose both parents held NS-SEC 1 jobs, they report a mean pay of £2,784 and for those who had one parent working in a NS-SEC 1 job they report a mean pay of £2,653 in NS-SEC 2 jobs.

Overall, the results above highlight those respondents whose parents held NS-SEC 1 jobs report better outcomes in terms of educational attainment, returns to their education, and pay within professional and managerial jobs compared to respondents who had just one parent working in a NS-SEC 1 job. This suggests that the transmission of advantage of social origin may be underestimated if we only consider the 'higher' occupational status of an individual's parents. More specifically, how individuals from upper-class origins are further advantaged over others. Therefore, the results may highlight a weakness in the dominance approach that could lend support to previous literature which found that the dominance approach performed poorer than a range of other models for estimating the explanatory power of social origin (Thaning and Hällsten, 2020).

3.6 Parental Education

Given the UKHLS includes information on parental education, using these variables in conjunction with parental occupation provides us with a broader understanding of respondents' social origin. Using different proxies of social origin in wage equations will capture different types of intergenerational transmissions of human capital and possibly transmissions of cultural capital. Studies have shown a clear relationship between parental education and cultural capital (Turmo, 2004; Wildhagen, 2009) which has also been shown to be associated with socio-economic background (Baumert et al., 2003; Sullivan, 2001). This relationship will be explored in further detail in Chapter 4. Therefore, the UKHLS provides a range of useful measures for social origin that are important for capturing different intergenerational transmission channels relevant for furthering our understanding of the social origin pay gap.

Although parental occupation is asked of respondents when they were 14, parental occupation in the UKHLS is not. However, for those whose mother or father's highest level of education is 'did not go to school at all' or 'left school with no qualifications', then it is logical to assume these were respondents' parent's highest level of education during their upbringing, given one can only increase their levels of educational attainment. For example, if a respondent in the survey is 40 years old and their mother or father's highest level of education is 'left school with no qualifications' or 'did not go to school at all', then it is logical to assume that these were the parents' levels of education when the respondent was 14. Thus, for these two groups, if this is their parents' current highest level of education, we assume it was their parents' highest level of education during the respondent's social upbringing. Therefore, we argue that it is reasonable to use these levels of education as a proxy for respondents' parental education during their adolescence.

Using parental education as a proxy for social origin is also useful for the analysis as it allows us to further test the totality of parental 'resources' by considering both parents' levels of education. Therefore, we can use parental education with the caveat being that some respondents' parents may have left school with some qualifications but then obtained a degree later in life; thus, it is not possible to pinpoint exactly what their level of education was when

the respondent was 14 years old. However, parental education is at some level a proxy for parental intelligence and that intelligence is unlikely to change over time regardless of when qualifications were obtained. It is likely that it is the intelligence of the parents or the capacity to be educated which will impact on the way the child is reared – e.g. reading and talking to them, encouraging them in school, access to books etc. Thus, we examine the association of parental education on labour market outcomes, not as the main focus of this chapter, but more so to supplement the above findings when using parental occupation as a proxy for social origin and investigate whether using a different proxy for social origin will provide different results. We follow the dominance approach and create a new variable for parental education based on the 'higher' education of respondents' mother and father.

Table 3.14 shows that 15.5% of the sample's mother and/or father reported holding a degree and 26.4% left school with no qualifications. Given the mean age of the sample is 40 and we are dealing with education levels of the previous generation, where higher education was more exclusive and leaving school with no qualifications was more common, these figures seem reasonable. We also inspect parents' education over time (see Appendix Table 5) and observe that overall, parental education levels are broadly consistent over the nine waves. This arguably provides further support to our argument that using parental education as a proxy for social origin is justifiable, even though it is not measured during respondents' adolescence.

Table 3.14: Respondents' highest parental education

Higher of mother & father's education	Freq.	Percent	Cum.
Degree	23,942	15.5	15.5
Post school qualifications	45,974	29.8	45.3
Left school with some school qualifications	41,086	26.6	71.9
Left school with no qualifications	40,784	26.4	98.3
Did not go to school at all	2,665	1.7	100
Total	154,451	100	

To avoid replicating the above section which uses parental occupation as a proxy for social origin, here we focus on parental education and its association with respondents' labour market

outcomes i.e., occupational status and pay. Firstly, we focus on respondents' parental education levels and their occupational status.

Table 3.15 shows that those whose parents' have higher levels of education are more likely to work in professional and managerial jobs and are less likely to work in routine jobs. For example, those whose parents' highest qualification is a degree, almost two thirds work in a managerial or professional job, whereas 16% work in a routine job. Conversely, respondents whose parents hold lower levels of education are less likely to work in professional and managerial jobs and are more likely to work in routine jobs. We observe that over half of respondents whose parents did not go to school work in routine jobs and just over one fifth work in professional and managerial occupations.

Table 3.15: NS-SEC 3 occupational status & highest parental education

Current job: Three Class NS-SEC	Higher of mother & father's education					
	Degree	Post school quals	Left school with some school quals	Left school with no quals	Did not go to school at all	Total
Management & professional	12,054	17,674	13,617	9,205	275	52,825
	63.9%	**49.5%**	**44.4%**	**34.6%**	**21.7%**	**46.7%**
Intermediate	3,747	8,490	7,477	6,442	345	26,501
	19.9%	**23.8%**	**24.4%**	**24.2%**	**27.3%**	**23.4%**
Routine	3,054	9,547	9,580	10,928	645	33,754
	16.2%	**26.7%**	**31.2%**	**41.1%**	**51%**	**29.9%**
Total	18,855	35,711	30,674	26,575	1,265	113,080
	100%	**100%**	**100%**	**100%**	**100%**	**100%**

Next, we turn our attention to parental education and pay. We observe linearity in respondents' wages in relation to their parents' highest level of education. Table 3.16 shows that those whose parents report a higher level of education, they report higher wages. For instance, those whose parents hold a degree report an average gross monthly pay of £2,575 and those whose parents did not go to school report an average gross monthly wage of £1,482. These figures highlight huge pay disparities in relation to parental education. However, as shown above, those whose parents hold a higher level of education are more likely to work in professional jobs, which would influence their level of earnings.

Table 3.16: Highest parental education and pay

Highest parental education	Gross mean monthly pay
Degree	£2,575
Post school qualifications	£2,137
Left school with some qualifications	£2,059
Left school with no qualifications	£1,808
Did not go to school at all	£1,482

Overall, this section highlights considerable pay differences in relation to respondents' social origins. However, here we are comparing the wages from different social class groups with no controls. We know that occupational status, work location, work sector, firm size etc. can all impact individuals' pay levels. We also know that individuals from upper-class origins are more likely to work in professional and managerial jobs and in areas like London where pay is higher. Thus, next we control for a range of labour market features to examine if there is a social origin pay gap.

3.7 Results and Discussion

This section presents the results from OLS and random effects regression. In the models, we transform the pay (dependent) variable. When a dependent variable has been log transformed, the coefficient for a predictor is interpreted as the percentage change in the dependent variable associated with a unit increase in the independent variable compared to the reference category (Witteveen and Attwell, 2017), in this case those from NS-SEC 1 origins.

The main independent variable in this chapter is social origin. We follow the dominance approach and take the 'higher' of respondents' mother and father's NS-SEC when the respondent was aged 14[12] and create a new variable to proxy for respondents' social origin. This chapter uses the derived variables provided in the UKHLS, the condensed 8-category version, which have also been used in several other studies on the social origin pay gap and studies on

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[12] For respondents' mother's occupation aged 14 we use the variable manssec8_dv, and for respondents' father's occupation aged 14 we use the variable panssec8_dv.

social mobility (Friedman and Laurison, 2017, 2019; Laurison and Friedman, 2016; Reeves and de Vries, 2019; Sullivan et al., 2018).

To address potential explanatories for social origin income differences, we control for a range of demographic variables such as sex, age (and age squared), disability, ethnicity, whether the respondent stays in an urban or rural area, government office region, and as we are working with panel data, the year of the study. The models include year dummies as although nominal wages tend to increase over time real wages may not, thus it would not be appropriate to compare wages from wave 1 (2009-2011) to wave 9 (2017-2019). Although one possible solution to address this is computing real wages by deflating nominal wages using indices of inflation, choosing an index can sometimes be arbitrary and different indices may lead to varying results (Longhi and Nandi, 2015).

Furthermore, the analysis controls for respondents' highest level of education ever reported in the UKHLS, as it is prudent to fully account for individuals' educational attainment before seeking alternative explanations for any social origin-earnings relationship (Goldthorpe, 2013). As we are interested in how social origin affects wages, the self-employed are excluded from the analysis. Although those engaged in self-employed work are included in the NS-SEC classification (NS-SEC 4), the dependent variables does not contain information on the wages of the self-employed. The UKHLS also provides information on a range of labour market characteristics that are useful for the analysis, such as work sector, whether the respondent works in a permanent or temporary job, firm size, managerial duties, and their occupational status.

The methodological starting point is the tradition in labour market research, following Mincer (1974), of estimating earnings functions based on cross-sectional data. This identifies the wage premia associated with each successive stage of qualifications attained by regressing the logarithm of wages on the level of qualification and a range of controls as appropriate (see e.g., Heckman et al., 2006 for an overview). Similar to previous studies in the field (Crawford and van der Erve, 2015; Crawford and Vignoles, 2014) we estimate an ordinary least squares regression (OLS) model of the relationship between respondents' observable features and

earnings. The natural log of gross monthly pay (ln(w)) of individual *i* at time *t* is hypothesised to be a function of various characteristics, skills, and experiences garnered throughout the individual's adolescence and adulthood.

We estimate OLS regressions to analyse the pay gap for each wave. We do so as pooled OLS is deployed when working with a different sample for each year or period of panel data[13] (Wooldridge, 2010). This facilitates the examination of the social origin pay gap at each wave and thus for the examination of the pay gap over time. Furthermore, it allows us to explore any variation in the pay gap over a ten-year period, thus facilitating the examination of whether the pay gap was larger immediately after the 2008 recession or whether it has increased in more recent years. However, conclusions reached on this must be considered in light of a range of other factors, particularly the time lag effects of economic recessions which are difficult to disentangle (Altonji et al., 2016; Oreopoulos et al., 2006). To combat any time specific effects, we also conduct longitudinal analysis on the pooled sample to examine the pay gap over a longer period of time. Below outlines the equation of the models used to analyse the social origin pay gap.

3.7.1 Models

Model equation - $\ln(w) = \alpha + \beta_i S_j + \gamma_1 X + \gamma_2 X_2 + \delta_j C_k + \varepsilon$

- $\ln(w)$: logarithm of gross monthly pay
- S: Social origin dummies (proxied via parental occupation and/or parental education)
- X: Age
- C_k: Controls -
1. Demographics – age, age squared, sex, disability, ethnicity, region, urban/rural, year of study (longitudinal analysis – add *Wit* to the wage equation)
2. + Education – highest educational qualification
3. + Labour market variables – work sector, permanent/temporary job, firm size, managerial duties, and occupational status (NS-SEC category)

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[13] To ensure the sample sizes across all models were consistent, we dropped all missing values for the variables included in the analysis. Therefore, we analyse a sub-set of the sample in this section but nonetheless still large. We also analyse the dataset longitudinally to increase the statistical power of the results.

Models

- OLS regression – Dominance approach (wave 9)
- OLS regression – Dominance approach (waves 1 to 9)
- OLS regression – Total Parental NS-SEC (waves 1 to 9)
- Random effects regression - Dominance approach
- Random effects regression – 'Total' Parental NS-SEC
- Random effects regression – Highest Parental Education
- Random effects regression – 'Total' Parental Education
- Random effects regression – Highest Parental Occupation & Highest Parental Education

3.7.2 Cross-sectional analysis

3.7.2.1 Social origin wage gaps in wave 9 (2017-2019)

Table 3.17 reveals estimates for these progressively more elaborate wage equations for wave 9 (2017-2019). Wave 9 is used here as an example, however the wage equations for waves 1 to 8 are shown in Appendix Tables 6 to 13. Respondents from higher managerial and professional origins (NS-SEC 1) are omitted as the reference category in all waves.

The first model only controls for demographic features such as sex, age and age squared, disability, ethnicity, whether the respondent stays in an urban or rural area and government office region. This model can be thought of as capturing the 'raw' social origin pay gap. Results are in line with previous analyses of the social origin pay gap, in that all social origins are disadvantaged in comparison to those from higher managerial and professional origins (NS-SEC 1). The biggest pay gap is observed for those from NS-SEC 7 origins at 37.2%, followed closely by those with undefined social origins at 35.9%. Those from lower managerial and professional origins (NS-SEC 2) report the smallest pay gap at 12.5%.

The second model controls for educational attainment i.e., respondents' highest level of education. This is the preferred model as it captures social origin pay gaps within attainment groups, i.e., the pay gap that remains despite an individual's educational attainment. After controlling for education, the most disadvantaged group are those with undefined social origins, at 16.8%, followed by those from NS-SEC 7 origins at 14.8%. The pay gap is reduced by over

half for those from NS-SEC 7 and undefined social origins. Similar to the results we observed in Chapter 2, this reinforces that educational inequality is as a driver of earnings inequality.

Subsequent models control for a range of labour market characteristics, such as work sector, whether the respondent works in a permanent job, firm size, and managerial duties. Similar to Chapter 2, we acknowledge the debate around controlling for labour market features due to their correlation with pay (Angrist and Pischke, 2008). However, the social origin pay gap literature highlights that these factors play a role in explaining the social origin pay gap. Thus, if we did not control for such factors we potentially run the risk of over/underestimating the effect of social origin on pay. Therefore, in line with previous models and literature, we control for these labour market observables.

The pay gap is relatively unchanged once when we control for work sector and job security. In the fifth and sixth model we control for firm size and managerial duties. Both variables reduce the pay gap for all social origin groups. Lastly, in Model 7 we control for occupational status, thereby revealing the unexplained social origin pay gap that remains even when educational attainment, a range of important labour market attributes, and occupational status are accounted for. This reduces the pay gap for all social origin groups, however a significant pay gap remains for those with undefined social origins at 5.8%.

These result builds upon the findings from Chapter 2, which when using the LFS found the pay gap was largest for individuals with undefined social origins. The result adds further weight to the argument of Chapter 2, in that previous wage estimates that have omitted individuals with undefined social origins have underestimated the magnitude of the social origin pay gap and the number of individuals affected. This indicates that individuals who come from non-traditional/fragmented backgrounds are most disadvantaged in the labour market, even over those who come from working-class origins. This may be due to a lack of stability during one's childhood and adolescence that can have adverse impacts on their development and cognitive functioning that can lasting effects into adulthood. It may also be due to a lack of other forms of 'capital', such as social capital and cultural capital, which individuals from non-traditional/fragmented backgrounds do not acquire during their adolescence and can

disadvantage them in the labour market. Therefore, the results supplement the findings from Chapter 2 and highlight that individuals with undefined social origins experience the highest form of labour market disadvantage in terms of pay.

Table 3.17: Cross-sectional wage equations for wave 9 (2017-2019) using the dominance approach
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.125***	-0.070**	-0.070**	-0.065**	-0.062*	-0.055*	-0.031
NS-SEC 3 origins	-0.178***	-0.077**	-0.076**	-0.076**	-0.075**	-0.052*	-0.021
NS-SEC 4 origins	-0.313***	-0.144***	-0.144***	-0.140***	-0.121***	-0.086**	-0.042
NS-SEC 5 origins	-0.269***	-0.089**	-0.089**	-0.087**	-0.085**	-0.054	-0.015
NS-SEC 6 origins	-0.316***	-0.116***	-0.116***	-0.114***	-0.114***	-0.081**	-0.025
NS-SEC 7 origins	-0.372***	-0.148***	-0.147***	-0.140***	-0.138***	-0.103***	-0.032
Undefined origins	-0.359***	-0.168***	-0.168***	-0.167***	-0.154***	-0.116***	-0.058**
Female	-0.506***	-0.508***	-0.505***	-0.502***	-0.469***	-0.434***	-0.413***
Age	0.089***	0.076***	0.076***	0.074***	0.071***	0.052***	0.045***
Health	-0.141***	-0.119***	-0.118***	-0.115***	-0.104***	-0.078***	-0.060***
Urban	0.010	-0.010	-0.010	-0.010	0.018	0.001	0.006
Ethnicity	-0.050	-0.115***	-0.115***	-0.112***	-0.115***	-0.089***	-0.064***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.341***	6.662***	6.643***	6.400***	6.617***	6.845***	7.224***
Observations	7,567	7,567	7,567	7,567	7,567	7,567	7,567
R-squared	0.209	0.310	0.310	0.318	0.362	0.424	0.481

*** p<0.01, ** p<0.05, * p<0.1

3.7.2.2 Social origin wage gaps in all waves (2009-2019)

Table 3.18 shows the social origin wage equations for Model 7 (including all control variables) for waves 1 to 9. Results from Table 3.18 show that the pay gap is significant in eight of the nine waves for those with undefined social origins. The pay gap is also the largest in seven of the nine waves for this group. These results highlight that individuals from non-traditional/fragmented backgrounds report the largest pay gap of all groups. Moreover, as we observed in Chapter 2 and in this chapter, those with undefined social origins are the least likely to be in employment of all social origin groups and are least likely to work in professional and managerial occupations. Therefore, there is arguably a selection bias in the sample as it does not consider those who are unemployed, thus, it is plausible that the pay gap is upward-biased.

Furthermore, those from NS-SEC 5 and NS-SEC 6 origins report a significant pay gap in seven of the nine waves and those from NS-SEC 7 origins report a significant pay gap in two of the nine waves. These results are analogous to previous studies on the social origin pay gap in that they also highlight that individuals from working-class backgrounds receive lower pay than their upper-class counterparts even after accounting for their education and a range of labour market observables.

In addition, we find a significant pay gap for those from NS-SEC 4 (Small employers & own account) origins in four of the nine waves. This is an interesting finding as there is considerable variance amongst the self-employed. For instance, for those whose mother or father were partners in a law or accounts firm, they would be classified as from self-employed origins. Likewise, those whose parents were taxi-drivers, hairdressers, and many of those working in a trade, such as joiners, plumbers, painters etc., would also be classified as from self-employed origins. Many of these occupations could be argued as more 'routine like' as they are to some extent precarious in nature. For instance, many self-employed jobs are generally not highly paid, not considered to be of high occupational standing, do not require a degree to do, and do not offer job security nor a guaranteed income. Therefore, the pay gaps we observe for those from self-employed origins may be explained to some extent by the routine nature of their origins.

Although we observe significant pay gaps, it is also important to note that the pay gap varies over time. For example, those with undefined social origins report the largest pay gap in

wave 8 at 11.3% and the lowest in wave 2 at 2.4%. However, the results from wave 2 appear to be a one off as the pay gap in all other waves ranges from 5.5% to 11.3% and is only significant at the 10% level for those from NS-SEC 6 origins. The pay gaps are smallest in most waves for those from NS-SEC 2 origins, which is line with previous literature and is expected given this relates to individuals whose mother and/or father held a lower professional or managerial job.

Lastly, as previously stated, one of the strengths in using the UKHLS is that it allows for the examination of the social origin pay gap over time. This allows us to observe whether the pay gap has increased or decreased from 2009 to 2019. The results reveal a significant pay gap at all waves, except wave 2, highlighting significant pay gaps at almost all points in time from 2009 to 2019. We observe that the pay gap is largest for those from undefined and NS-SEC 7 origins in wave 8 and is largest for those from NS-SEC 6 origins in wave 3. Overall, the pay gap is generally larger in waves six to eight. We also observe that the pay gap is significant for a larger number of social origin groups in the latter waves. This highlights that the pay gap has been larger in more recent years than it was immediately after the 2008 recession. This may indicate that in more recent times there are an increasing number of factors at play in the labour market which can influence the pay levels of equally qualified individuals.

With the increasing number of university graduates in the UK, a bachelor's degree has become more common, leading some to argue its leverage in the labour market has weakened (Major and Machin, 2018; Wakeling, 2005). The Office for National Statistics (2017) reported there were 14 million graduates in the UK in (July to September) 2017, which was a constant increase over the past decade. Moreover, not only are the number of graduates increasing in the UK, but the number of individuals leaving university with a first-class degree is also rising. Data from the HESA (2018) revealed that in 2018-19, 28% of students obtained a first-class honours degree from British universities, an increase from 22% in 2014-15. As an increasing number of graduates enter the labour market, it becomes harder to distinguish oneself in an overcrowded graduate labour market. Therefore, it is plausible that other factors beyond individuals' education, such as their social capital and cultural capital, are becoming more important in gaining access to professional and managerial jobs post-university as well as influencing progression within these jobs. For instance, Macmillan et al. (2014) found that 3.5 years following graduation, those with parents in a professional

or managerial role are 4.7 percentage points more likely to secure a top occupation themselves. In addition, Crawford and Vignoles (2014) concluded that graduates whose parents labour in routine occupations reap around 9% less, on average, than their counterparts whose parents worked in a professional or higher managerial occupation. These studies highlight that even when individuals from working-class origins do obtain a degree, they are still less likely to secure a professional job post-graduation and are less likely to earn as much as their upper-class peers within these jobs. A range of qualitative literature highlights how several factors beyond education, such as social networks, cultural tastes and interests plays a role in this. Research shows that professional firms favour candidates that exhibit analogous forms of social capital and cultural capital, which are closely associated with high socio-economic status, while acknowledging that this contradicts their commitment to social inclusion and recruiting the best 'talent' (Ashley and Empson, 2017). This is done to reproduce homologous elite culture and social groups within such firms to preserve the 'normalised' expectations about the character and practice of a city professional (Cook et al., 2012). More specifically, these studies show how those from more upper-class origins can ascend in the workplace with such forms of 'capital' and how the lack of such resources can disadvantage those from working-class origins.

However, it must be acknowledged that the data does not distinguish between those who hold a bachelor's degree and those who hold a master's degree or a PhD. A master's degree attracts higher wages and is more expensive, thus individuals from more wealthy origins may be more likely to rely on their parents' economic capital to pay for their studies or provide a loan for their postgraduate education, not as readily available to those from working-class origins. Thus, in some instances, we may be comparing the wages of a master's degree holder to a bachelor's degree holder, albeit working in the same types of jobs.

Next, we explore an alternative proxy for social origin that considers both parents' occupational status during respondents' adolescence.

Table 3.18: Cross-sectional wage equations for waves 1 to 9 (2009-2019) using the dominance approach
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9
NS-SEC 2 origins	-0.010	-0.003	-0.042**	-0.023	-0.021	-0.029	-0.032	-0.053**	-0.031
NS-SEC 3 origins	-0.025	-0.012	-0.032	-0.031	-0.030	-0.046**	-0.043*	-0.067***	-0.021
NS-SEC 4 origins	-0.051**	-0.034	-0.076***	-0.039	-0.048	-0.037	-0.071***	-0.089***	-0.042
NS-SEC 5 origins	-0.051**	-0.029	-0.054**	-0.048*	-0.052*	-0.060**	-0.064**	-0.065**	-0.015
NS-SEC 6 origins	-0.046**	-0.047*	-0.064***	-0.052**	-0.056**	-0.048*	-0.036	-0.063**	-0.025
NS-SEC 7 origins	-0.039	-0.012	-0.041	-0.030	-0.058**	-0.040	-0.037	-0.064**	-0.032
Undefined origins	-0.079**	-0.024	-0.067***	-0.055**	-0.079***	-0.080***	-0.084***	-0.113***	-0.058**
Female	-0.466***	-0.446***	-0.438***	-0.439***	-0.424***	-0.449***	-0.408***	-0.397***	-0.413***
Age	0.059***	0.056***	0.059***	0.054***	0.058***	0.049***	0.051***	0.055***	0.045***
age2	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.000***
Health	-0.038***	-0.053***	-0.050***	-0.063***	-0.068***	-0.057***	-0.065***	-0.046***	-0.060***
Urban	-0.007	-0.009	0.005	-0.010	0.022	0.013	-0.002	0.006	0.006
Ethnicity	-0.133***	-0.144***	-0.121***	-0.115***	-0.102***	-0.074***	-0.064***	-0.049**	-0.064***
Region	✓	✓	✓	✓	✓	✓	✓	✓	✓
Education	✓	✓	✓	✓	✓	✓	✓	✓	✓
Work sector	✓	✓	✓	✓	✓	✓	✓	✓	✓
Permanent Job	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firm size	✓	✓	✓	✓	✓	✓	✓	✓	✓
Managerial duties	✓	✓	✓	✓	✓	✓	✓	✓	✓
Occupational status	✓	✓	✓	✓	✓	✓	✓	✓	✓
Constant	6.887***	6.960***	6.870***	7.007***	6.816***	7.130***	7.039***	7.028***	7.224***
Observations	9,217	10,276	9,845	9,617	9,509	8,519	8,323	7,778	7,567
R-squared	0.480	0.494	0.493	0.517	0.471	0.520	0.498	0.487	0.481

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

3.7.2.3 Total Parental NS-SEC in all waves (2009-2019)

As shown in Table 3.13, we observe considerable differences in life outcomes between those from NS-SEC 1 origins when we consider only the 'higher' occupational status of one parent to both. These results suggest the transmission of parental advantage may be underestimated using the dominance approach. To address this, we create a new variable for social origin which adds the mother and father's activity status to account for both parents' NS-SEC and included those whose parent(s) were unemployed, deceased, or not living with the respondent during their adolescence. This acts as a proxy for measuring total parents' resources and accounts for those with undefined social origins. Respondents whose mother and father held NS-SEC 1 jobs have a value of two, and those whose parents held NS-SEC 7 jobs have a value of 14. For respondents whose parents were unemployed, not living with respondent, or deceased at age 14 they are assigned a value of 16 i.e., a NS-SEC value of eight for the mother and the father. Respondents with a value of two are the reference category.

This approach brings further insight into the influence of social origin but is not without its limitations. For instance, respondents with a value of two, three, 15 and 16 can only be made up by a combination of two possible values. For example, for respondents with a value of three, one parent held a NS-SEC 1 job and the other held a NS-SEC 2 job, and for respondents with a value of 15, one parent held a NS-SEC 7 job and the other was unemployed, not living with the respondent, or deceased. For those with a value of four to 14, these values could be made up by more than one combination of values. Therefore, it is possible the values of some respondents may not truly capture the 'reality' of a respondent's social origin. For instance, respondents assigned with a value of eight could be due to their mother holding a NS-SEC 1 job and their father a NS-SEC 7 job, or both parents holding a NS-SEC 4 jobs. However, what is insightful using this approach is that it allows us to consider both parents' occupational status and thus compare the wages of those from more 'lower' social origins to those from more 'higher' social origins. This is particularly useful as the social origin pay gap literature highlights several benefits of stemming from a 'higher' social origin. Therefore, by considering both parents' occupational status this allows us to examine two things; if the transmission of parental advantage has been underestimated when considering just the occupational status of one parent, and if respondents whose *both* parents worked in routine jobs or were economically inactive are further disadvantaged. As we know how those with a value of two, three, 15 and 16 are comprised, we mainly focus on these

four groups in the analysis. Table 3.19 shows respondents' total parental NS-SEC. As shown in Table 3.19, for 1,140 (0.8%) respondents in the sample, both their parents worked in NS-SEC 1 jobs when they were 14. Table 3.19 shows that over 13,000 respondents (almost nine per cent of the sample) have a value of 16 for total parental NS-SEC i.e., both their mother and father were unemployed, not living with respondent, or deceased when they were 14.

Table 3.19: Total Parental NS-SEC

Total Parental NS-SEC	Freq.	Percent	Cum.
2 – Both parents NS-SEC 1	1,140	0.8	0.8
3 – 1 parent NS-SEC 1 & 1 parent NS-SEC 2	4,847	3.3	4.1
4	7,825	5.3	9.4
5	5,885	4.0	13.4
6	5,065	3.4	16.8
7	5,616	3.8	20.6
8	8,911	6.0	26.6
9	14,222	9.7	36.3
10	15,449	10.5	46.8
11	12,188	8.3	55.1
12	15,443	10.5	65.6
13	12,869	8.7	74.3
14 – Both parents NS-SEC 7	14,059	9.5	83.8
15 – 1 parent NS-SEC 7 & 1 parent economically inactive	10,712	7.3	91.1
16 – Both parents economically inactive	13,083	8.9	100
Total	147,314	100	

Overall, we observe that the pay gap is generally larger for those from 'lower' social origins. We observe that the pay gap is largest in five of the nine waves for respondents with a value of 15 or 16 i.e., those who one parent held a NS-SEC 7 job and the other was economically inactive, or both parents were economically inactive. This result supplements the findings from Chapter 2 in that individuals with undefined social origins report a larger pay gap compared to those with defined social origins.

Although the total parental occupation model is not directly comparable to the dominance approach model as these models use different proxies for social origin, the results may shed some light on the importance of the totality of parental resources. For instance, in the dominance approach model, when we consider only the activity status of one parent, the pay gap is largest for those with undefined social origins at 11.3%. In the total parental NS-SEC model, for respondents with a value of 16, the pay gap ranges from 11.8% to 26.1%, and is therefore larger in every wave than it is at its largest in the dominance approach model. This highlights that when we consider the occupational status of both parents, the pay gap may be larger. However, we must also recognise that we are comparing individuals whose parents

were either unemployed, not living with the respondent or deceased to those whose parents held NS-SEC 1 jobs and thus the social origin 'groups', and by extension, the reference category in both models are different and therefore not directly comparable. Nonetheless, this indicates that individuals who were not living with their parents or both parents were unemployed or deceased are further disadvantaged in terms of pay. This indicates there is a further effect of parental association with the labour market or not clearly belonging to a household, which profoundly affects the life outcomes of a substantial share of the working age population. Therefore, this may indicate that the size of the pay gap has been underestimated in previous research by only considering the occupational status of the 'higher' of the mother or father.

In addition, we observe that for respondents with a value of 10 to 16, i.e., those whom we would generally regard as from working-class origins, they report a significant pay gap in most waves. Naturally, using total parental NS-SEC as a proxy for social origin provides us with more social origin 'groups' i.e., eight when using the dominance approach and 16 when using the total parental NS-SEC. When using the total parental NS-SEC approach we observe a significant pay gap for more social origin groups. Although this may be explained by the natural increase in the number of social origin 'groups', it may also indicate that more people experience a significant pay gap once we consider the occupational status of both parents.

Table 3.20: Cross-sectional wage equations for waves 1 to 9 (2009-2019) using Total Parental NS-SEC
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Respondents with a value of 2 (i.e., mother and father held a NS-SEC 1 job when respondent was 14)

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9
Total Parental NS-SEC - 3	-0.190**	-0.153*	-0.095	-0.080	-0.092	-0.115**	0.006	-0.051	-0.151**
Total Parental NS-SEC - 4	-0.167**	-0.071	-0.098	-0.047	-0.062	-0.153***	0.020	-0.124	-0.229**
Total Parental NS-SEC - 5	-0.134	-0.097	-0.103	-0.105	-0.086	-0.177***	-0.045	-0.090	-0.173**
Total Parental NS-SEC - 6	-0.266***	-0.121	-0.108	-0.065	-0.061	-0.181***	-0.041	-0.105	-0.188**
Total Parental NS-SEC - 7	-0.174**	-0.107	-0.108	-0.089	-0.091	-0.209***	-0.081	-0.133*	-0.258***
Total Parental NS-SEC - 8	-0.193**	-0.113	-0.115	-0.124	-0.105	-0.170***	-0.060	-0.109	-0.157**
Total Parental NS-SEC - 9	-0.188**	-0.111	-0.105	-0.085	-0.079	-0.154***	-0.017	-0.087	-0.186***
Total Parental NS-SEC - 10	-0.218***	-0.165*	-0.143*	-0.120	-0.132	-0.193***	-0.079	-0.113*	-0.209***
Total Parental NS-SEC - 11	-0.224***	-0.158*	-0.190**	-0.127	-0.158*	-0.226***	-0.056	-0.142**	-0.218***
Total Parental NS-SEC - 12	-0.227***	-0.137	-0.143*	-0.117	-0.126	-0.215***	-0.088	-0.155**	-0.218***
Total Parental NS-SEC - 13	-0.226***	-0.132	-0.115	-0.118	-0.144*	-0.215***	-0.078	-0.125*	-0.203***
Total Parental NS-SEC - 14	-0.224***	-0.146*	-0.127	-0.101	-0.152*	-0.185***	-0.060	-0.146**	-0.206***
Total Parental NS-SEC - 15	-0.222***	-0.155*	-0.159*	-0.144	-0.169**	-0.234***	-0.091	-0.164**	-0.247***
Total Parental NS-SEC - 16	-0.261***	-0.161*	-0.162*	-0.136	-0.190**	-0.243***	-0.118	-0.220***	-0.241***
Female	-0.468***	-0.451***	-0.443***	-0.437***	-0.422***	-0.441***	-0.404***	-0.395***	-0.402***
Age	0.061***	0.059***	0.061***	0.056***	0.063***	0.052***	0.055***	0.059***	0.052***
Health	-0.036**	-0.051***	-0.050***	-0.057***	-0.068***	-0.056***	-0.071***	-0.055***	-0.056***
Urban	-0.011	-0.022	-0.005	-0.021	0.011	0.009	-0.009	0.006	0.006
Non-white ethnicity	-0.137***	-0.138***	-0.137***	-0.122***	-0.102***	-0.093***	-0.091***	-0.078***	-0.084***
Region	✓	✓	✓	✓	✓	✓	✓	✓	✓
Education	✓	✓	✓	✓	✓	✓	✓	✓	✓
Labour market observables	✓	✓	✓	✓	✓	✓	✓	✓	✓
Constant	7.020***	7.062***	6.964***	7.075***	6.790***	7.207***	7.017***	6.996***	7.212***
Observations	8,938	8,903	8,529	8,380	8,301	7,626	7,660	7,326	7,319
R-squared	0.481	0.490	0.498	0.518	0.467	0.516	0.498	0.476	0.476

*** p<0.01, ** p<0.05, * p<0.1

3.7.3 Longitudinal analysis

As well as analysing the social origin pay gap at each wave, as we are working with longitudinal data, we can also analyse the social origin pay gap using a pooled sample. Firstly, we briefly discuss why Pooled OLS regressions is inappropriate for this specific type of analysis. OLS estimation of the pooled model can yield seriously misleading estimates of the slope coefficient (Koop, 2008) as all individually specific effects are completely ignored. Therefore, we should use an individual effects model that allows for different individuals to have different regression lines - α_i varies across individuals. The incorporation of such individual effects – such as non-cognitive abilities, soft skills, personality traits etc. - allows all respondents in the sample to have a different regression line. This is an important feature of analysing longitudinal data as ultimately individuals are heterogeneous. Thus, it is more difficult to deal with heterogeneity when using cross-sectional data, other than to hope that it is being captured by the explanatory variables. With panel data, we have richer datasets that allow us to deal with heterogeneity through individual effect models (Koop, 2008). Furthermore, as previously acknowledged there are time lag effects of recessions on wages that are difficult to disentangle when analysing the pay gap cross-sectionally. Examining the pay gap longitudinally can combat any cross-sectional effects in the previous results.

Two possible models we could use when conducting longitudinal analysis are fixed effects and random effects[14]. The main reason fixed effects models is inapplicable for this study is that it cannot tell us anything about the relationship with independent variables that do not change over time, in this case parental occupation when the respondent was 14 and can only provide information about deviations from the mean over time (Bell et al., 2018). Therefore, in this case a fixed effects model would not provide important information about the relationship between respondents' pay and their social origin, as well as other important control variables (Nerlove, 2005). Thus, one disadvantage of the fixed effects estimator is that we cannot estimate the impact of time-invariant characteristics such as sex, ethnicity, and country of birth. Therefore, as the aim of this chapter is to examine the social origin pay gap, a fixed effects model is inapplicable as parental occupation is a time invariant variable. Respondents are only asked about their mother and father's activity status when they were

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[14] To decide between using fixed effects or random effects we ran a Hausman test. The Hausman test is used to determine the appropriate model that should be applied to the panel data (Longhi and Nandi, 2015). The null hypothesis is that the preferred model is random effects versus the alternative, fixed effects (Greene, 2008). The Hausman test tests whether the unique errors (ui) are correlated with the regressors; the null hypothesis is they are not. If Prob > chi2 is < 0.05 (i.e., significant), we do not reject null hypothesis i.e., use random effects. When we performed the Hausman test for the dataset, Prob > chi2 = 0.0000. Therefore, the value is not significant and thus we use random effects.

14, the first time they enter the survey but not thereafter as this variable does not change over time. As social origin is the main independent variable, fixed effects is inappropriate for the analysis.

Furthermore, if we have reason to suspect that differences across individuals have some influence on the dependent variable then we should use random effects (Torres-Reyna, 2007). Given we hypothesise that individuals' social origin does partly explain their earnings random effects is most suitable for the analysis. An advantage of random effects is that the model can include time invariant variables, such as ethnicity, whereas in the fixed effects model these variables are absorbed by the intercept. As the random effect model considers the individual-specific, time-invariant term, αi, in the error term, its estimators are more efficient than all estimators in the class of estimators consistent under the same conditions (Longhi and Nandi, 2015). Random effects models include an individual specific intercept in the model, assumed to be random, thus including individual specific effects, which are ignored in OLS, and therefore implying full exogeneity of the model (Koop, 2008). In addition, random effects allow us to generalize the inferences beyond the sample used in the model (Torres-Reyna, 2007). Furthermore, by including sex and ethnicity in the models we mitigate the likelihood of masking any gender or ethnicity pay gap in the results, which would not be possible with a fixed effects model.

3.7.3.1 Dominance Approach

Similar to the cross-sectional analysis above, we also control for a range of demographics such as sex, age and age squared, disability, ethnicity, whether the respondent stays in an urban or rural area, government office region, and as we are using longitudinal data, we control for the year of the study. Respondents from higher managerial and professional origins (NS-SEC 1) are omitted as the reference category. The results of which are shown in Table 3.21. Directly after this, we show the results from the longitudinal analysis using Total Parental NS-SEC as a proxy for social origin in Table 3.22. Results are in line with previous analyses of the social origin pay gap, in that all social origins are disadvantaged in comparison to those from higher managerial and professional origins (NS-SEC 1). The biggest pay gap is observed for those from NS-SEC 7 origins at 38.2%, followed by those with undefined social origins at 35.1%. Respondents from lower managerial and professional origins (NS-SEC 2) report the smallest pay gap at 11%.

The second model controls for educational attainment i.e., the respondent's highest level of education. After controlling for education, the most disadvantaged groups are those with undefined social origins, facing an earnings gap of on average 16.9%, followed closely by those with from NS-SEC 7 origins at 16.8%. The pay gap is reduced by over a half for those from NS-SEC 7 and undefined social origins once we control for education. Similar to the results we observed in Chapter 2, this reinforces that educational inequality is as a driver of earnings inequality. After we control for a range of labour market observables, including occupational status, we observe the pay gap is largest for those with undefined social origins, at 11.7%, followed by those from NS-SEC 7 origins at 11.2%. This highlights when we examine the pay gap longitudinally, it remains the largest for those from non-traditional/fragmented backgrounds.

One strength of this chapter is by conducting longitudinal analysis it significantly increases the sample size, ranging from seven to ten thousand observations from a cross-sectional perspective, to almost 95,000 observations when conducting panel regressions. This provides greater statistical power and provides stronger evidence when inferring the results to the broader UK population. More specifically the results highlight that when we pool the sample of respondents and use panel regression, as opposed to OLS regression on cross-sectional data, the results do not significantly change i.e., we still observe a significant pay gap for those from routine and undefined social origins. Therefore, these findings also supplement the results of Chapter 2 by highlight a significant pay gap for respondents with undefined social origins. This provides further weight to the argument that previous wage estimates and the number of individuals affected by such wage gaps has been underestimated.

Furthermore, the findings also demonstrate that the social origin pay gap is not exclusive to one point in time. Although, these results are not directly comparable with the cross-sectional results, the wage gaps we observe when conducting longitudinal analysis are generally larger when examining them at one specific wave. Overall, this finding makes a valuable contribution to the social origin pay gap literature as it highlights a social origin wage gap using 10 years of longitudinal data, which previously has not been done before. Next, we consider total parental NS-SEC as another way of proxying for respondents' social origin.

3.7.3.2 Total Parental NS-SEC

After controlling for respondents' demographics, education, and labour market features, we observe the pay gap is largest for respondents with a value of 16, at 21.7%, followed by those with a value of 15, at 17.3%. Overall, the results are fairly linear in that for respondents from 'lower' social origins report a larger pay gap. It is only respondents with a value of three to six, whom we might regard as those from 'higher' social origins, that do not report a significant pay gap. Although we observe significant pay gaps for more social origin 'groups', which may be explained by the natural increase in the number of social origin 'groups' when adopting a total parental NS-SEC approach, the results may indicate that when we consider the occupational status of both parents, more individuals experience a significant pay gap. Overall, the results highlight a significant social origin pay gap for those from more routine origins, with the pay gap being the largest for respondents with undefined social origins.

Table 3.21: Longitudinal wage equations for waves 1 to 9 (2009-2019) using the dominance approach
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.110***	-0.057***	-0.058***	-0.059***	-0.054***	-0.048***	-0.043***
NS-SEC 3 origins	-0.158***	-0.062***	-0.064***	-0.066***	-0.062***	-0.054***	-0.049***
NS-SEC 4 origins	-0.318***	-0.158***	-0.157***	-0.158***	-0.144***	-0.126***	-0.107***
NS-SEC 5 origins	-0.289***	-0.124***	-0.124***	-0.125***	-0.120***	-0.102***	-0.084***
NS-SEC 6 origins	-0.310***	-0.124***	-0.124***	-0.127***	-0.122***	-0.108***	-0.083***
NS-SEC 7 origins	-0.382***	-0.168***	-0.168***	-0.170***	-0.163***	-0.144***	-0.112***
Undefined origins	-0.351***	-0.169***	-0.170***	-0.171***	-0.161***	-0.142***	-0.117***
Female	-0.491***	-0.497***	-0.505***	-0.503***	-0.487***	-0.468***	-0.468***
Age	0.094***	0.091***	0.090***	0.087***	0.084***	0.076***	0.072***
Health	-0.018***	-0.018***	-0.018***	-0.018***	-0.018***	-0.019***	-0.019***
Urban	-0.020***	-0.023***	-0.022***	-0.021***	-0.009	-0.010	-0.009
Non-white ethnicity	-0.178***	-0.216***	-0.216***	-0.210***	-0.209***	-0.187***	-0.171***
Region	✓	✓	✓	✓	✓	✓	✓
Year of study	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.230***	6.385***	6.430***	6.330***	6.480***	6.560***	6.682***
Observations	94,831	94,831	94,831	94,831	94,831	94,831	94,831
R-squared	0.199	0.308	0.308	0.316	0.355	0.408	0.448

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3.22: Longitudinal wage equations for waves 1 to 9 (2009-2019) using Total Parental NS-SEC
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Respondents with a value of 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Parental NS-SEC - 3	-0.065	-0.065	-0.063	-0.070	-0.055	-0.063	-0.051
Total Parental NS-SEC - 4	-0.131**	-0.098*	-0.098*	-0.106*	-0.082	-0.084*	-0.067
Total Parental NS-SEC - 5	-0.174***	-0.105*	-0.106*	-0.113**	-0.091*	-0.089*	-0.060
Total Parental NS-SEC - 6	-0.219***	-0.122**	-0.123**	-0.130**	-0.108*	-0.108**	-0.076
Total Parental NS-SEC - 7	-0.257***	-0.152***	-0.151***	-0.160***	-0.132**	-0.128**	-0.091*
Total Parental NS-SEC - 8	-0.302***	-0.161***	-0.161***	-0.169***	-0.137**	-0.137***	-0.102**
Total Parental NS-SEC - 9	-0.265***	-0.163***	-0.162***	-0.169***	-0.143***	-0.136***	-0.101**
Total Parental NS-SEC - 10	-0.370***	-0.226***	-0.224***	-0.232***	-0.199***	-0.189***	-0.137***
Total Parental NS-SEC - 11	-0.410***	-0.234***	-0.233***	-0.241***	-0.217***	-0.201***	-0.145***
Total Parental NS-SEC - 12	-0.439***	-0.233***	-0.231***	-0.242***	-0.210***	-0.200***	-0.136***
Total Parental NS-SEC - 13	-0.466***	-0.246***	-0.244***	-0.256***	-0.225***	-0.208***	-0.139***
Total Parental NS-SEC - 14	-0.498***	-0.260***	-0.258***	-0.268***	-0.239***	-0.227***	-0.153***
Total Parental NS-SEC - 15	-0.552***	-0.297***	-0.296***	-0.306***	-0.271***	-0.255***	-0.173***
Total Parental NS-SEC - 16	-0.602***	-0.351***	-0.351***	-0.358***	-0.325***	-0.301***	-0.217***
Female	-0.496***	-0.500***	-0.509***	-0.498***	-0.489***	-0.472***	-0.471***
Age	0.094***	0.090***	0.090***	0.087***	0.087***	0.075***	0.071***
Health	-0.016***	-0.016***	-0.016***	-0.016***	-0.017***	-0.018***	-0.018***
Urban	-0.032***	-0.033***	-0.033***	-0.032***	-0.021**	-0.021***	-0.020***
Non-white ethnicity	-0.162***	-0.209***	-0.208***	-0.202***	-0.208***	-0.181***	-0.166***
Region	✓	✓	✓	✓	✓	✓	✓
Year of study	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Labour market observables			✓	✓	✓	✓	✓
Constant	6.409***	6.510***	6.558***	6.409***	6.672***	6.669***	6.992***
Observations	83,182	83,182	83,182	83,182	83,182	83,182	83,182
R-squared	0.204	0.308	0.309	0.316	0.349	0.401	0.461

*** p<0.01, ** p<0.05, * p<0.1

3.7.4 Parental education

3.7.4.1 Highest parental education

Next, we use parental education as a proxy for respondents' social origin, with those whose parents' highest level of education is a degree omitted as the reference category. Table 3.23 presents the results from the random effects model with the pooled sample.

In Model 1, we control for respondents' demographics and year of study. We observe a significant pay gap for all social origin groups. The biggest pay gap is observed for those whose parents did not go to school at 58.5%, followed by those whose parents left school with no qualifications at 36.9%. The second model controls for educational attainment i.e., the respondent's highest level of education. This gives us an idea of social origin pay gaps once we include the education of the respondent and their parents. After controlling for education, the most disadvantaged group remains those whose parents did not go to school, experiencing a pay gap of 30.3%. The pay gap is almost halved for this group and almost reduced by 2.7 times for those whose parents left school with no qualifications. Similar to the results we observed above, this reinforces that educational inequality is as a driver of earnings inequality.

As above, subsequent models control for a range of labour market characteristics. After controlling for work sector, the pay gap largely remains unchanged. Next, we control for job security which, similar to the above models, slightly increases the pay gap for all groups, indicating the pay gap is explained by respondents' insecure employment levels. In the fifth and sixth model, we control for firm size and managerial duties respectively. Both variables reduce the pay gap for all groups. After controlling for all the labour market attributes stated above, we still observe a significant pay gap for all parental education groups.

Lastly, in Model 7 we control for occupational status. After doing so, we still observe a significant pay gap for all social origin groups. The most disadvantaged group remains those whose parents did not go to school, experiencing a pay gap on average of approximately 17.4%. For those whose parents left school with no qualifications, the pay gap is 7.2%. Thus, we observe linearity in the wage coefficients in that those whose parents hold lower levels of education report a higher pay gap.

Overall, the pay gap remains linear throughout all models, in that those whose parents have lower levels of education report a larger pay gap, even after controlling for respondents' own level of education, and a rich set of explanatory variables, including their occupational status. These results provide further evidence that parental education is associated with wages and lends further support that individuals from 'higher' social origins benefit in the labour market from their parents' levels of education.

Table 3.23: Longitudinal wage equations for waves 1 to 9 (2009-2019) using Parental Education
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Respondents whose parents hold a degree

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post school qualifications	-0.187***	-0.080***	-0.080***	-0.082***	-0.081***	-0.071***	-0.050***
Left school with some qualifications	-0.239***	-0.095***	-0.095***	-0.097***	-0.092***	-0.080***	-0.050***
Left school with no qualifications	-0.369***	-0.139***	-0.138***	-0.142***	-0.137***	-0.118***	-0.072***
Did not go to school at all	-0.585***	-0.303***	-0.301***	-0.303***	-0.271***	-0.238***	-0.174***
Female	-0.525***	-0.522***	-0.531***	-0.528***	-0.510***	-0.488***	-0.486***
Age	0.095***	0.091***	0.090***	0.087***	0.084***	0.075***	0.068***
Health	-0.016***	-0.015***	-0.015***	-0.015***	-0.015***	-0.016***	-0.017***
Urban	-0.025***	-0.027***	-0.027***	-0.026***	-0.013	-0.015*	-0.015*
Non-white ethnicity	-0.186***	-0.218***	-0.218***	-0.212***	-0.214***	-0.190***	-0.165***
Region	✓	✓	✓	✓	✓	✓	✓
Year of study	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.231***	6.395***	6.443***	6.341***	6.498***	6.582***	6.854***
Observations	77,780	77,780	77,780	77,780	77,780	77,780	77,780
R-squared	0.194	0.303	0.303	0.311	0.35	0.41	0.47

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

3.7.4.2 Total parental education

As argued above, both parents' attributes and resources can affect their offspring's' life outcomes. Thus, next we consider respondents' parents' levels of education. Tables showing both mother and father's highest educational qualification are shown in the Appendix Tables 3 and 4. The values of these variables were flipped so that those whose mother or father held a degree were assigned a value of one and those whose mother or father did not attend school were assigned a value of five. This was done to remain in line with the analysis of parental occupation given that the NS-SEC classification scheme assigns those from the higher managerial and professional social origins with a value of one and those from routine origins a value of seven.

We create a variable that adds both parents' levels of education to provide us with a measure of respondents' parents 'total' level of education. This provides us with 141,927 observations as shown in Table 3.24. For respondents whose both parents held a degree, they have a value of two, and those whose both parents did not go to school have a value of ten.

Table 3.24: Total parental education

Total parental education	Freq.	Percent	Cum.
2 – both parents hold a degree	7,374	5.2	5.2
3 – 1 parent has a degree & 1 has post-school qualifications	7,816	5.51	10.7
4	18,765	13.22	23.92
5	20,041	14.12	38.04
6	32,145	22.65	60.69
7	15,821	11.15	71.84
8	35,982	25.35	97.19
9 – 1 parent did not go to school & 1 parent left school with no qualifications	1,608	1.13	98.33
10 – both parents did not go to school	2,375	1.67	100
Total	141,927	100	

We then run the same models as above but this time using total parental education as a proxy for respondents' social origin. Respondents with a value of two i.e., both their parents held a degree are omitted as the reference category.

In Model 1, we control for respondents' demographics and year of study. We observe a significant pay gap for all other parental educational groups, apart from those with a value of three i.e., one parent holds a degree and one holds post-school qualifications. The biggest pay gap is observed for those whose parents did not go to school at 65.8%. The second largest pay gap is observed for those with a value of nine, i.e., one parent did not go to school

and one parent left with no qualifications, at 49%. Overall, the wage coefficients are almost linear in that for respondents' whose parents hold lower levels of education, they experience a larger pay gap.

We then control for respondents' highest level of education. After doing so we still observe fairly linear results. After controlling for educational attainment this approximately halves the pay gap for those with a value of nine and ten. Next, we control for work sector, job security, firm size and whether the respondent reported having managerial duties as part of their job. After doing so, the pay gap remains significant for all social origin groups, except those with a value of three. Those whose parents both did not attend school still report the largest pay gap at 26.1%.

Lastly, we control for occupational status. This reduces the pay gap for all groups, however the pay gap is still significant for all groups, except those with a value of three. Those who had one parent with a degree and one with post school qualifications report the lowest pay gap of less than one per cent. Respondents whose parents did not go to school (i.e. respondents with a value of 10) experience the largest pay gap at 19.1%. Those with a value of nine report the second largest pay gap at 16.4%.

In Table 3.23, when we examined the pay gap using the 'higher' of respondents' parents' education, we observed the pay gap was largest for those whose parents did not go to school at 17.4%, whereas Table 3.25 shows that for those whose both parents did not go to school the pay gap is 19.1%. Although these two models are not directly comparable as they are using different proxies for social origin, the results may indicate that when we consider respondents' total parental education, the pay gap is larger for those whose parents hold no formal education.

Overall, the results from this model highlight a clear association between parental education and wages. In particular, the results demonstrate that respondents whose parents have lower levels of education experience larger pay gaps. This provides further evidence of how important features of an individual's upbringing, such as their parental education, can be associated with their earnings in the labour market. Lastly, we consider the 'higher' occupational status of respondents' parents' and their parents' highest level of education.

Table 3.25: Longitudinal wage equations for waves 1 to 9 (2009-2019) using Total Parental Education
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Respondents with a value of 2 (i.e. those whose parents' highest level of education is a degree)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Parental Education - 3	-0.039	-0.015	-0.014	-0.016	-0.010	-0.015	-0.007
Total Parental Education - 4	-0.158***	-0.057**	-0.056*	-0.058**	-0.051*	-0.045*	-0.027
Total Parental Education - 5	-0.223***	-0.097***	-0.095***	-0.099***	-0.091***	-0.084***	-0.063***
Total Parental Education - 6	-0.317***	-0.139***	-0.137***	-0.141***	-0.131***	-0.117***	-0.079***
Total Parental Education - 7	-0.290***	-0.114***	-0.113***	-0.116***	-0.108***	-0.098***	-0.069***
Total Parental Education - 8	-0.416***	-0.156***	-0.154***	-0.158***	-0.149***	-0.131***	-0.080***
Total Parental Education - 9	-0.490***	-0.248***	-0.248***	-0.250***	-0.232***	-0.217***	-0.164***
Total Parental Education - 10	-0.658***	-0.327***	-0.325***	-0.327***	-0.294***	-0.261***	-0.191***
Female	-0.523***	-0.523***	-0.532***	-0.529***	-0.511***	-0.489***	-0.485***
Age	0.095***	0.091***	0.090***	0.087***	0.084***	0.075***	0.068***
Health	-0.014***	-0.014***	-0.014***	-0.014***	-0.015***	-0.016***	-0.016***
Urban	-0.031***	-0.032***	-0.032***	-0.031***	-0.019**	-0.020**	-0.018**
Non-white ethnicity	-0.182***	-0.218***	-0.218***	-0.212***	-0.212***	-0.189***	-0.166***
Region	✓	✓	✓	✓	✓	✓	✓
Year of study	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.310***	6.434***	6.481***	6.379***	6.526***	6.611***	6.870***
Observations	71,947	71,947	71,947	71,947	71,947	71,947	71,947
R-squared	0.196	0.301	0.302	0.31	0.349	0.404	0.467

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

3.7.5 Highest parental occupation and highest parental education

Lastly, we consider the occupational status and education of respondents' parents. This provides an arguably more comprehensive proxy of parental resources as it considers more than one important parental feature that may influence respondents' labour market outcomes. Thus, we create a variable that adds the 'highest' occupation and the highest education of respondents' parents. It is important to note that the information on respondents' highest parental occupation and highest parental education does not have to be from the same parent. For example, if a respondent's father held a NS-SEC 1 job and has post-school qualifications and their mother works in a NS-SEC 2 job and has a degree, this variable would take the father's occupation as the highest and the mother's education as the highest and combine them both to assign a value for the respondent. In this case, the respondent would be assigned a value of two; one for parental occupation, as their father worked in a NS-SEC 1 job, and one for parental education, as their mother holds a degree. Respondents with a value of 13 represents those whose parent(s) were economically inactive and did not go to school.

Table 3.26: Respondents' parents' highest occupation and highest parental education

Highest parental occupation and highest parental education	Freq.	Percent	Cum.
2 – parent NS-SEC 1 job & has a degree	7,635	5.7	5.7
3	12,514	9.3	15.0
4	13,378	10.0	25.0
5	14,187	10.6	35.6
6	12,650	9.5	45.1
7	11,414	8.5	53.6
8	11,110	8.3	61.9
9	12,679	9.5	71.4
10	15,735	11.8	83.2
11	12,755	9.5	92.7
12	9,010	6.7	99.4
13 – parent(s) economically inactive & did not go to school	855	0.6	100
Total	133,922	100	

As parental occupation has eight values (NS-SEC 1 to 8) and parental education has five values (degree, post school qualifications, left school with some qualifications, left school with no qualifications and did not go to school) this means the highest value a respondent could have for this variable is 13. Table 3.26 shows 855 respondents had a value of 13. The lowest value for this variable is two. This value represents those whose parent(s) held a NS-SEC 1 job and a reported a degree as their highest educational qualification. In the sample 7,635 respondents had a value of two. Therefore, in the case of social origin, those with a

value of two would be regarded as stemming from the 'highest' social origin and those with a value of 13 as from the 'lowest' social origin. Thus, we create dummy variables for the random effects models and omit respondents with a value of two as the reference category.

Like the above models, we firstly run a model controlling for respondents' demographics and the year of the study. All social origin groups experience a significant pay gap compared to those from the 'highest' social origin i.e., those with a value of two. Those whose parent(s) were economically inactive and did not go to school report the largest pay gap at 60.2%. The wage coefficients we observe in Model 1 are almost linear, in that those from 'lower' social origins report the larger pay gaps.

Next, we control for the highest educational qualification of the respondent. This reduces the pay gap by more than a half for most social origin groups; however, the pay remains significant for all groups except those with a value of three. After controlling for work sector, the pay gap largely remains unchanged. Similar to the above models, when we control for job security, the pay gap slightly increases for all social origin groups. Controlling for firm size has mixed results. We then control for managerial duties, which slightly reduces the pay gap. Lastly, we control for occupational status. The pay gap remains significant for all groups except those with a value of three. Overall, the pay gap is largest for those whom we would regard as stemming from a 'lower' social origin, with the pay gap being the largest for those with a value of 13 at 20.5%.

Overall, this model highlights that when we consider the 'higher' occupational status and highest level of education of respondents' parents, those from the 'lowest' social origins report the largest pay gaps. Thus, once we have considered two important features of an individual's social origin, parental occupation and parental education, we still observe a significant pay gap for those from 'lower' social origins. The results also indicate a pay gap for more social origin 'groups' once we consider respondents' highest parental occupation and highest parental education. We also observe larger pay gaps in comparison to when adopting the dominance approach, although these models are not directly comparable. These results build upon previous empirical evidence and highlight that when we measure social origin in a number of ways, those from 'lower' social origins experience larger pay gaps to those from the 'highest' social origin.

Table 3.27: Longitudinal wage equations for waves 1 to 9 using (2009-2019) Highest Parental Occupation and Education
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Respondents with a value of 2.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Highest Parental Occupation & Education - 3	-0.067**	-0.033	-0.034	-0.035	-0.038	-0.037	-0.027
Highest Parental Occupation & Education - 4	-0.149***	-0.065**	-0.066**	-0.069**	-0.074***	-0.065***	-0.047**
Highest Parental Occupation & Education - 5	-0.227***	-0.107***	-0.107***	-0.109***	-0.103***	-0.092***	-0.062***
Highest Parental Occupation & Education - 6	-0.277***	-0.114***	-0.115***	-0.118***	-0.112***	-0.098***	-0.070***
Highest Parental Occupation & Education - 7	-0.333***	-0.162***	-0.162***	-0.165***	-0.160***	-0.140***	-0.098***
Highest Parental Occupation & Education - 8	-0.381***	-0.171***	-0.169***	-0.171***	-0.162***	-0.145***	-0.099***
Highest Parental Occupation & Education - 9	-0.344***	-0.156***	-0.156***	-0.159***	-0.158***	-0.141***	-0.096***
Highest Parental Occupation & Education - 10	-0.388***	-0.165***	-0.166***	-0.169***	-0.170***	-0.150***	-0.099***
Highest Parental Occupation & Education - 11	-0.417***	-0.171***	-0.171***	-0.174***	-0.172***	-0.148***	-0.093***
Highest Parental Occupation & Education - 12	-0.500***	-0.208***	-0.209***	-0.211***	-0.202***	-0.177***	-0.111***
Highest Parental Occupation & Education - 13	-0.602***	-0.347***	-0.348***	-0.353***	-0.328***	-0.289***	-0.205***
Female	-0.525***	-0.522***	-0.530***	-0.528***	-0.510***	-0.488***	-0.485***
Age	0.094***	0.090***	0.090***	0.086***	0.084***	0.075***	0.068***
Health	-0.015***	-0.015***	-0.015***	-0.015***	-0.015***	-0.016***	-0.017***
Urban	-0.026***	-0.028***	-0.027***	-0.027***	-0.014*	-0.015*	-0.015*
Non-white ethnicity	-0.178***	-0.215***	-0.215***	-0.209***	-0.210***	-0.186***	-0.164***
Region	✓	✓	✓	✓	✓	✓	✓
Year of study	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.320***	6.435***	6.482***	6.381***	6.538***	6.619***	6.880***
Observations	77,780	77,780	77,780	77,780	77,780	77,780	77,780
Number of pidp	13,058	13,058	13,058	13,058	13,058	13,058	13,058

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

3.8 Discussion

Overall, the results highlight significant pay gaps for individuals from 'lower' social origins when we proxy for their social origin using parental occupation and parental education. The results indicate that those whose parents worked in professional and managerial jobs or have degrees are advantaged in comparison to others. On the other hand, the results indicate that those whose parent(s) were economically inactive and did not go to school are the most disadvantaged. This further highlights the impact of social origin on individuals' pay levels and indeed their life outcomes. Stemming from a family that has low forms of economic, cultural, and social capital can have a detrimental impact on individuals' labour market outcomes. This section discusses the many ways in which stemming from a 'higher' social origin can be beneficial and how stemming from a 'lower' social origin can be disadvantageous in the labour market.

The above results could partly be explained by a number of factors, such as individuals varying forms of employment over this ten-year period, their likelihood of securing a professional or managerial job, work location, departmental work, and their progression within the workplace. Firstly, we consider work location. Research has shown that opportunities are disproportionate in the labour market in terms of location, with a disproportionate number of professional and managerial companies residing in London, as well as their senior workforce also being located there. Working and living in London is a costly endeavour and is simply unaffordable for many. Many individuals rely on some form of financial support from their parents, particularly graduates and those early in their career. For those who can afford it they can take greater 'risk' and capitalise on opportunities early in their career that will benefit them in the long run. Friedman and Laurison (2019) found that in one of the professional firms in their case studies, at every pay grade, staff based in London are considerably more likely to be privately educated and those from upper-class origins were highly over-represented in these positions. This finding illustrates the level of wealth needed to build a career in London. Moreover, the association between class background and work location is not limited to the private sector. Research on the Civil Service highlights only 22% of London based civil servants are from working class origins compared to almost half in the North-East (Social Mobility Commission, 2021). Therefore, when individuals do enter such 'top jobs' they do not enter with the same level of resources, which can either help scaffold some people's career or on the other hand, the lack of such resources can prove detrimental.

Furthermore, research highlights departmental inequities in the labour market, what has also been referred to as 'vertical progression', in that individuals are 'promoted' to the highest paying departments such as consultancy and advisory. Friedman and Laurison (2019) found that in one of their case studies on a national broadcaster, 79% of staff in Commissioning – its highest paying department – came from professional or managerial origins and only 7% stemmed from working-class origins. Individuals in consultancy and advisory roles are generally 'hands on' working with clients, most of them also stemming from upper-class backgrounds. It is in these roles where a range of factors, which are correlated with social class, such as type of schooling, social networks, and cultural tastes and interests, all play a role in forging relationships with clients. Qualitative literature shows that individuals who display 'highbrow' forms of cultural capital and possess similar social networks are favoured in the workplace over their equally qualified peers who do not possess such forms of 'capital' (Ashley and Epsom, 2017; Ashley et al., 2015; Cook et al., 2012; Rivera, 2011). Therefore, possessing such resources can help individuals gain work in the highest paying departments and projects, which can also help advance their career. In relation to the Civil Service, only 12% of those from routine origins work at the Treasury versus 45% at the Department for Work and Pensions, again highlighting the role of work location in pay gaps (Social Mobility Commission, 2021). This relationship between cultural capital, social capital and social origin will be further explored in Chapter 4.

In addition, literature shows that individuals from working-class origins are less likely to be promoted within professional and managerial jobs and are less likely to hold senior positions. For example, Friedman and Laurison (2019) found that in one of their professional case studies on a UK national broadcaster, only 2.5% of senior managers and executives/head of departments came from working-class backgrounds. In more recent times, we have also seen industry publishing research highlighting a lack of progression for those from working class backgrounds. For example, a report by KPMG and Bridge Group (2022) found that socio-economic background was the biggest barrier to career progression, more so than gender, ethnicity, disability, and sexual orientation. From a sample of over 16,500 partners and employees, this study found that individuals from 'lower' socio-economic backgrounds took on average 19% longer to progress to the next grade, when compared to those from 'higher' socio-economic backgrounds. Furthermore, a study on the workforce of the Civil Service, found that only 18% of senior civil servants are from working-class or 'low' socio-economic

backgrounds and the proportion of senior civil servants from 'high' social origins is higher today than in 1967 (Social Mobility Commission, 2021).

In terms of pay, the report from KPMG and Bridge Group (2022) also found a median socio-economic background pay gap of 9.9% and a mean socio-economic pay background gap of 3.2% between those from professional and working-class origins. These figures exclude partners and given that individuals from working-class backgrounds are significantly under-presented at Partner level (Friedman and Laurison, 2019), these figures are most likely underestimated. The study also found that individuals from working-class backgrounds received less in terms of their average bonuses. Bonuses can be rewarded based on several factors such as performance, meeting targets, and number of hours worked. Although these may be regarded as more 'objective' measurements, the bonus process inherently has a degree of subjectivity as senior management decide on who gets awarded a bonus and how much. Again, this may be another area of the workplace were relationships with senior management, based on class-cultural affinity and social networks, can benefit those from upper-class origins and disadvantage those from working-class origins.

Given we observe a significant pay gap for those from NS-SEC 4 origins in four of the nine waves, this merited further inspection. In terms of observable traits, respondents from NS-SEC 4 origins are largely similar to those with identified social origins but where they differ most is in terms of ethnicity. For instance, 89.4% of the sample are white where this figure is 71.4% for those from NS-SEC 4 origins. Furthermore, respondents from NS-SEC 4 origins report the highest percentage of respondents who are Indian, Pakistani, from 'any other Asian background', Arab, 'any other black background', and Irish. We also see that respondents from NS-SEC 4 origins report the second highest percentage of respondents who are Bangladeshi, Chinese, and African. Given respondents' parents from NS-SEC 4 origins were self-employed this could be explained by their parents being shopkeepers, restaurants owners, or ethnic entrepreneurs (Light, 1972; Light and Bonacich, 1988; Waldinger, 1993). Therefore, the results from the pay gap estimates may indicate there is some form of social and economic disadvantage in the labour market for those from particular ethnic origins and highlights a double disadvantage at the intersection between social class and race/ethnicity.

This form of double and even triple disadvantage has been highlighted in previous social origin pay gap literature. Friedman and Laurison (2019) found an earnings disadvantage in relation to class, sex, and race. For example, the authors found that working-class women earned on average £11,500 less per annum than their male counterparts from upper class origins. Furthermore, black working-class women earned £20,000 less per annum than white upper-class males from professional and managerial origins (Friedman and Laurison, 2019). These results show how various axes of inequality can overlap and augment wage penalties in professional and managerial jobs. While many studies on intersectionality have focused on multifaceted forms of disadvantage, few have done so with regards to pay. Given the various pay gaps we observe in the labour market for women and those of ethnic minority, it is not surprising that we observe double and even triple forms of disadvantage for women of colour from working-class origins. Further research on such pay gaps is needed, but qualitative research is also required to understand what goes on 'behind' the data and to explore the processes through which these pay gaps arise and manifest. For example, Friedman and Laurison (2019) used qualitative methods to try and further understand what factors may be explaining some of the unexplained social origin pay gap. They conducted over 160 interviews, focus groups, and observations within managerial and professional firms and found that forms of capital, such as cultural capital and social capital can help those from more affluent origins gain access to the highest paying jobs, locations, firms, departments, and positions. The qualitative literature on the 'class ceiling' sheds some light on why those from professional origins are also earning more in intermediate as well as professional jobs.

In summary, a plethora of evidence shows that when individuals from working-class origins do obtain access to professional or managerial jobs, they are less likely to work in the most financially rewarding departments and locations and are less likely to progress in these jobs. When they do progress, it takes longer on average, and a range of qualitative literature shows it is a much more labour intensive process i.e. they have to work harder than their upper-class peers to get there. All of these factors can contribute to the social origin pay gap we observe in this chapter. These sets of results may be explained by other factors that are valued in the workplace, which are correlated with social class. The next chapter considers the role of cultural capital and social capital and examines to what extent these play a role in explaining class wage penalties.

3.9 Limitations and Further Research

Although, this chapter offers a valuable contribution to the literature, it nonetheless does have its limitations. Firstly, the pay variable that we use in this chapter includes those in full-time and part-time employment. Whilst this allows us to consider pay gaps for all respondents in paid employment, we cannot examine if there is any variation in the social origin pay gap for those in full-time employment and part-time employment. In addition, the split between those in full-time or part-time work may vary by occupation. For instance, those in more routine jobs are more likely to work part-time than those in professional and managerial jobs. However, this is not just an occupational 'issue' but has impacts on the gender pay gap too. For instance, literature on the gender pay gap (Antonie et al., 2020; Mumford and Smith, 2009) highlights that women look for part time work to allow for their family responsibilities often work in lower paid occupations because the option to work part time is more common in these occupations. Given Friedman and Laurison (2019) found a double earnings pay gap for women of working-class origins, examining the pay gap in relation to full/part-time work and social origin and sex, would provide us with a deeper understanding of the explanatories of the class pay gap.

Furthermore, although we control for respondents' highest educational qualification, this does not tell us anything about the 'quality' of respondents' education. Evidence shows individuals who attended private school enjoy a higher return to their education compared to those who attended state school (Dolton and Vignoles, 2000; Green et al., 2012; Naylor et al., 2002). The same has been shown for university graduates from Russell Group universities, particularly Oxbridge (Belfield et al., 2018; Walker and Zhu, 2013). Evidence shows recruiters perceive attendance of an elite university as a proxy for 'merit' in that students have satisfied higher entry requirements but also that they possess the 'right' forms of embodied and objectified cultural capital (Cook et al., 2012; Waters, 2006, 2007). Research in the UK and the US shows that recruiters' perceptions of institutionalised cultural capital can be quite narrow. Ashley and Empson (2017) found that one UK firm recruited from a pool of just seven universities, whereas Rivera (2015) found that some US recruiters have a core target of three to five 'super-elite' universities. With individuals from upper-class origins having a higher rate of acceptance over their equally qualified working-class peers to Russell Group universities (Zimdars, 2007), this increases their chances of securing employment at the top paying firms. Therefore, this limitation may bias the OLS estimator because educational choice is affected by social origin. Thus, as institutional 'quality' is not

captured in the data, and coming from an upper-class background is positively associated with attending a Russell-Group university, the coefficient for social origin in the wage equation may be biased upwards and potentially overestimating the social origin pay gap. However, this is not necessarily to say that Russell Group universities always provide a higher quality of education, but that they have greater signalling effects in the labour market. Therefore, we are limited in asserting to what extent education plays a mediating role on pay gaps due to only having information on respondents' highest educational qualification.

In addition, we are unable to control for work location. Evidence shows those working in London enjoy higher wages compared to the rest of the UK (Think Plutus, 2023). Although we control for location of respondents in terms of where they live, the UKHLS only provides information on where the respondent works i.e., at home, employer's premises etc., and not the actual location of their place of work. However, this is not a factor that is completely omitted from this thesis as the LFS provides information on respondents work location, and thus we control for work location in Chapter 2.

This chapter also acknowledges that it does not say much about the heterogeneity of wages amongst individuals from various social classes and instead focus on earnings between individuals from different social classes. Evidence has shown that inequality between classes is also increasing (Weeden et al., 2007), however the focus of this chapter is on the wage gaps between those from different social origin groups hence the comparison of those from working-class origins to those from professional and managerial origins.

Moreover, this chapter only focuses on wage income and thus focuses on income inequality rather than wealth inequality. Given those from 'higher' social origins are more like to inherit other forms of income, such as property, inheritance wealth, family businesses etc., if we considered individuals' overall levels of wealth and not just their wage income, the wealth gap would arguably be larger than the income gap. Therefore, as well as those from working class origins being paid less, they also are more likely to have only one form of income, thus further widening the gulf of income/wealth inequality between those from upper-class and working-class origins. Lastly, there is most likely a selection bias in the results as it only considers those earning a wage income. As shown above, those with undefined social origins are less likely to be in employment and thus the pay gaps we observe are likely to be an underestimate.

3.10 Conclusion

In conclusion, this chapter has used data from waves 1 to 9 (2009-2019) of the UKHLS to examine the social origin pay gap in the UK labour market. We used OLS regressions and random effects regressions to examine the social origin pay gap. When examining the pay gap cross-sectionally, we find that those from routine and undefined social origins experience a significant pay gap compared to those from upper-class origins. Following the dominance approach, we observe a significant pay gap for those with undefined social origins in eight of the nine waves, a significant pay gap for those from NS-SEC 5 and NS-SEC 6 origins in seven waves, and a significant pay gap for those from NS-SEC 4 origins in four waves. The pay gap is largest for those with undefined social origins in seven of the nine waves. When we examine the pay gap longitudinally, we find the pay gap is largest for those with undefined social origins, at 11.7%, followed by those from NS-SEC 7 origins at 11.2%. These results supplement previous literature and the findings from Chapter 2 in that it provides further evidence that previous wage gaps that have omitted individuals with undefined social origins have underestimated the size of the social origin pay gap and the number of individuals affected.

Furthermore, we find the pay gap varies over time. For instance, those with undefined social origins report the largest pay gap in wave 8 at 11.3%, and the lowest in wave 2 at 2.4%. For individuals from NS-SEC 6 origins, the pay gap ranges from 1.2% in wave 2 to 6.4% in wave 8, which highlights the pay gap has increased in more recent years. We also observe that the pay gap is significant for a larger number of social origin groups in the latter waves. This demonstrates that the pay gap has been larger in more recent years than it was immediately after the 2008 recession. This may indicate that in more recent times there are an increasing number of factors at play which can impact individuals' level of pay independent of their education.

When examining the pay gap longitudinally, we observe a significant pay gap for those from undefined and working-class origins, with the pay gap being the largest for those with undefined social origins when adopting the dominance approach. Another original aspect of this chapter is the estimation of pay gaps via proxies considering both parents' occupational status and both parents' education. When we use total parental occupation as a proxy for social origin, we observe that the pay gap is generally larger for those from 'lower' social origins, particularly respondents with a value of 15 or 16 i.e., those whose parent(s) were

economically inactive. This result supplements the findings from Chapter 2 in that individuals with undefined social origins report the largest pay gap compared to those with defined social origins. We also observe similar results when using parental education as a proxy for social origin in that those whose parents have lower levels of education report a larger pay gap. In addition, we observe significant pay gaps when we proxy for social origin using total parental education, and when considering respondents' highest parental occupational status and their parents' highest level of education i.e., those from undefined and routine origins report a significant pay gap compared to those from upper-class origins.

Overall, the results highlight that respondents from undefined and routine origins experience a significant pay gap compared to those from upper-class origins once we control for a rich set of explanatory variables, including educational attainment and occupational status. Thus, these results challenge the meritocracy rhetoric as they highlight that even when those from non-traditional and working-class backgrounds obtain degrees and work in professional and managerial jobs, they receive lower returns to their degree and less pay within professional and managerial occupations. The results highlight the magnitude of various socio-economic inequalities in the UK labour market that urgently need to be addressed.

Chapter 4   Does Cultural Capital and Social Capital explain the social origin pay gap?

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4.1 Abstract

This chapter uses a range of proxies for cultural capital[15] and social capital[16] in the United Kingdom Household Longitudinal Study (UKHLS) to examine to what extent they explain the social origin pay gap. We observe significant differences in cultural engagement and social capital in relation to respondents' social origin. In terms of pay gaps, when we examine the pay gap longitudinally, we observe significant pay gaps for all social origin groups after controlling for cultural capital, educational attainment, and a rage of labour market observables. The pay gap is largest for those with undefined social origins at 8.9%, followed by those from NS-SEC 4 origins at 8.7%. This indicates that cultural capital does not fully explain the social origin pay gap and thus we consider other factors that can explain the wage differences amongst equally qualified individuals; therefore, we account for respondents' social networks. When we control for social capital, educational attainment, and respondents' labour market features, we observe that the pay gap is significant for those from NS-SEC 4 to NS-SEC 7 origins and those with undefined social origins. The pay gap is largest for respondents from NS-SEC 4 origins, at 8.3%, and is second largest for those with undefined social origins at 7.9%. This indicates that part of the wage disadvantage experienced by individuals from NS-SEC 4 to NS-SEC 7 origins and undefined social origins is likely to represent the impact of unequal access to social capital. Overall, the results indicate social capital plays a role in explaining the social origin pay gap.

4.2 Introduction

The emergence of a 'class ceiling', in which individuals from working class origins are likely to suffer a pay penalty relative to individuals with equivalent educational qualifications from

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[15] Cultural capital is measured via respondents' cultural engagement i.e. it proxies for respondents' objectified cultural capital and measures their institutionalised cultural capital through respondents' highest educational qualification.

[16] Social capital is measured through the employment status, education, and income of respondents' friends. This chapter does not adhere to Bourdieu's, Putman's, or Coleman's definition of social capital but instead takes a more practical approach in light of the data provided in the UKHLS.

upper-class backgrounds, has profound implications for the large number of individuals potentially affected. This is in addition to society-wide implications for social justice, education, and economic performance. Research on the 'class ceiling' has controlled for educational attainment and a range of labour market observables, highlighting that strictly human capital factors do not fully explain individuals' earnings. Therefore, there are other factors, beyond the narrow notion of human capital, that are class related and can influence individuals' wages. This chapter explores the hypothesis that cultural capital and social capital play a role in explaining the differences in pay amongst individuals from different social class backgrounds who hold the same levels of education. A wealth of literature shows how these forms of capital can play a role in the workplace, in terms of the hiring, recruitment and promotion process, influencing individuals' networks, and individuals' ability to establish 'fit', particularly within professional and managerial occupations, all of which affect individuals' level of pay. Social capital is commonly used within economics and other disciplines as a type of capital that has considerable explanatory power (Fine, 2010). Thus, the aim of this chapter is to explore whether notions of cultural capital and social capital can be operationalised using existing social survey data and to what extent these complement the National Statistics Socio-economic Classification (NS-SEC) in understanding social origin pay gaps. Therefore, this chapter aims to address the following research question: To what extent does cultural capital and social capital explain the social origin pay gap?

This chapter examines the social origin pay gap using data from waves 1 to 9 (2009–2019) from the UKHLS and uses a range of proxies for cultural capital and social capital to examine how these impact social origin wage gaps. This chapter offers a valuable contribution to the social origin pay gap literature as it is the first of its kind to empirically examine to what extent cultural capital and social capital explain class pay gap penalties. Furthermore, the chapter synthesises both economic and sociological thinking on labour market outcomes in an attempt to offer a better explanation for the social origin pay gap than previous empirical efforts have been able to. Examining and understanding the statistical association between cultural capital and social capital in relation to the social origin pay gap is important for policy and workplace practices which can help address and eliminate the systems and processes through which such pay gaps emerge and are perpetuated.

The chapter addresses its research question by considering respondents' engagement with 20 cultural activities, most of which are generally regarded as 'highbrow', and respondents' social networks, such as the employment status of their three best friends, how they first met their best friends, and the proportion of respondents' friends who have a job, and similar levels of education and income. We examine respondents' level of engagement for each cultural activity and their social networks in relation to their social class background. We observe significant differences in cultural engagement between those with defined and undefined social origins. We also observe respondents from professional and managerial origins report the highest levels of engagement in all cultural activities. Respondents from NS-SEC 1 (higher professional and managerial) origins report the highest levels of engagement in 16 of the 20 cultural activities, and their engagement is particularly high in prominent 'highbrow' cultural activities such as ballet and attending the opera. Those from working-class (NS-SEC 5 to NS-SEC 7) and undefined social origins report the lowest levels of engagement for all cultural activities. In terms of 'total' cultural engagement, this is highest for those from NS-SEC 1 origins and lowest for those from NS-SEC 7 origins. In terms of respondents' social capital, we observe that those from NS-SEC 1 origins are most likely to have met their best friends at university or through and organisation or activity and those from working-class origins are most likely to have met their friends in the neighbourhood or at school. Those from NS-SEC 1 origins are most likely to have friends in employment, those with undefined social origins are least likely, and those from working-class origins are most likely to have friends who have similar levels of education, which given the results observed in Chapter 3, is generally low levels of education.

When we examine the pay gap longitudinally using eight waves of data, we observe significant pay gaps for all social origin groups after controlling for cultural capital, educational attainment, and a rage of labour market observables. The pay gap is largest for those with undefined social origins at 8.9%, followed by those from NS-SEC 4 origins at 8.7%. This indicates that cultural capital does not fully explain the social origin pay gap and thus we consider other factors that can explain the wage differences amongst equally qualified individuals; therefore, we account for respondents' social networks.

When we control for social capital, educational attainment, and respondents' labour market features, we observe that the pay gap is significant at the 1% level for those from NS-SEC 4

to NS-SEC 7 origins and those with undefined social origins and is significant at the 10% level for those from NS-SEC 3 origins. The pay gap is largest for respondents from NS-SEC 4 origins, at 8.3%, and is second largest for those with undefined social origins at 7.9%. This indicates that part of the wage disadvantage experienced by individuals from NS-SEC 4 to NS-SEC 7 origins and undefined social origins is likely to represent the impact of unequal access to social capital.

Overall, the results demonstrate that social capital plays a role in explaining the social origin pay gap. The results also indicate that social capital plays a greater role in explaining the social origin pay gap than cultural capital. However, social capital is proxied through four variables, whereas cultural capital measures only one form of cultural capital i.e., objectified cultural capital, which is proxied through respondents' cultural engagement. Thus, social capital offers arguably more of a comprehensive proxy than cultural capital, which may explain some of the differences we observe in the results. Future research would benefit from including variables which also measure forms of individuals 'embodied' cultural capital, such as accent, speech, mannerisms etc., and whether respondents have ever been mistreated or discriminated against due to such features to examine their impacts on pay.

This chapter is structured as follows: section 4.3 provides a critical literature review of the role of cultural capital and social capital in relation to social origin and offers some possible hypotheses about how these forms of capital may at least partially explain the social origin pay gap. Section 4.4 discusses the dataset used and justifies the variables selected and section 4.5 presents the descriptive statistics of respondents' cultural capital and social capital in relation to their social origin. Section 4.6 presents the results from the analysis with discussion and section 4.7 acknowledges the limitations of the study and outlines avenues for future research. Lastly, the chapter ends with concluding the main findings and highlighting the chapter's contributions to the literature.

4.3 Literature Review

Individuals' social origins are widely acknowledged as a substantial determinant on their educational attainment and their labour market outcomes (Bukodi and Goldthorpe, 2011; Halsey et al., 1980; Jencks et al., 1972; Sewell et al., 1976). It is commonly accepted that the effects of social origin are at least partially transmitted through the educational system,

in that those from more affluent backgrounds invest more in their education which leads to greater employment prospects (Erikson and Jonsson, 1998; Mastekaasa, 2011; van de Werfhorst, 2002). Individuals who are highly educated, generally have high levels of earnings, work in distinguished occupations, have more 'influential' networks to utilise, and are on average, more ardent cultural consumers (Chan, 2010; Jæger and Katz-Gerro, 2010; Peterson and Kern, 1996). A body of literature highlights that the importance of individuals' cultural consumption and preferences are growing amongst an expanding field of university graduates (Ashley and Empson, 2017; Ashley et al., 2015; Friedman et al., 2017; Friedman and Laurison, 2019). However, it is not just our education levels that influence our cultural interests; often our social networks and cultural preferences are intertwined.

It has been argued that our social networks can influence our cultural interests and preferences (Edelmann and Vaisey, 2014; Pachucki and Breiger, 2010) and thus can be thought of as a by-product of our social networks. However, on the other hand our cultural interests can also shape our networks (Reeves and de Vires, 2019). Often people engage in certain 'highbrow' cultural activities, such as the theatre, opera, and ballet, as a way of distinguishing themselves socially (Bourdieu, 1984). Engaging in such cultural activities may in turn expand an individual's social network, thus forming relations with others who are of a distinguished social position. For individuals from 'higher' social classes, it is possible to see how their cultural capital and social capital could amplify each other, in turn bolstering their social status. This may increase an individual's financial prospects in the labour market as it can benefit them in the hiring and recruitment process where gatekeepers favour individuals who are more akin to them (Tilly and Tilly, 1998). It can also help build rapport in the workplace with clients and senior management, who are generally disproportionately from upper-class origins (Friedman and Laurison, 2019; Lee at al., 2021). Although there is a wealth of research on cultural capital and social capital and their relationship with social class, no study has yet examined their role in relation to the social origin pay gap.

The sociological concepts of cultural capital and social capital emphasise a broader range of attributes that can be of value in the labour market. Social capital theory argues that specific benefits derive from the extent, type, and quality of relations among individuals (Bourdieu 1993; Coleman, 1988), both collectively (e.g., Putnam, 1993) and individually (Coleman,

1988; Lin, 1999). Available evidence suggests social capital is positively associated with wages (e.g., Stone et al., 2004) and job quality (Franzen and Hangartner, 2006; Oesch and Ow, 2017). Studies show that high socio-economic status friends among individuals with low socio-economics status is among the strongest predictors for upward income mobility (Chetty et al., 2014; Manduca and Sampson, 2019). Furthermore, sociologists identify an individual's cultural capital (Bourdieu, 1986) as various elements that both signal and reinforce social position such as speech, accent, mannerisms, linguistics, tastes, and material belongings. Whilst cultural capital has been used to explain socio-economic variation in educational attainment (De Graaf et al., 2000; Tramonte and Willms, 2009) it is not prominent in research on the determinants of labour market outcomes.

Studies that have tested this association are unable to exclude alternative explanations due to using cross-sectional data (Borocz and Southworth, 1996; Laurison and Friedman, 2016). Studies which have used longitudinal data have found that cultural consumption can increase individuals' future earnings (Reeves and de Vires, 2019), indicating that cultural activities are a mechanism through which income inequality is reproduced, thus further contributing to the connection between social origin and future income (Blanden et al., 2007; Lamont et al., 2014). Although Reeves and de Vires (2019) used the UKHLS to examine if cultural consumption increases future earnings, this was not done in relation to individuals' social origin. It is important to consider social origin when examining the relationship between cultural consumption and wages as cultural consumption is correlated with socio-economic status (Bennett et al., 2009; Chan, 2010). One way of conveying our social position is through what we consume, not just in terms of food and drink, but also through the cultural activities we engage in (Bourdieu, 1984). Individuals from different social class backgrounds are inculcated with different social and cultural dispositions from a young age that can then be utilised in educational settings and the labour market (Bourdieu, 1986). Cultural consumption is often viewed as a form of embodied cultural capital that can be converted into economic gain in the labour market because such practices increase the likelihood of moving into more advantaged social positions (Friedman and Laurison, 2019; Freidman et al., 2017; Reeves and de Vries, 2019). However, as certain forms of cultural engagement are regarded as more 'legitimate' than others (Bourdieu, 1984), such as attending the theatre and opera, not all cultural consumption can be converted into economic gain for all social groups (Bourdieu, 1986). With the use of longitudinal data, we can more confidently conclude

whether cultural consumption is something that can be converted into economic gain in the labour market over time (Reeves and de Vries, 2019).

Thus, it is possible to see how social origin can explain earnings, independently of education. Cultural capital and social capital complement human capital in forming a range of attributes that are valued in the labour market. Those with appropriate attributes are able to land high quality jobs, composed of non-routine tasks that are less threatened by technology (Acemoglu and Autor, 2011; Goos and Manning, 2007). A good initial outcome leads to good experience, which in turn reinforces the stock of human, social, and cultural capital, setting in train a positive virtuous cycle. Conversely, entering the labour market with a weak start can result in a job that requires less non-routine skills, thereby reinforcing skills less strongly (or perhaps even negatively) through experience and setting in train a negative vicious cycle. Thus, individuals who have economic, social, and cultural capital via their social class background will be starting at an advantage over others in the labour market which can have subsequent impact on career progression and their lifetime earnings.

The combination of data provided in the UKHLS on educational and labour market outcomes with a wealth of information on individual attributes and social context, enables the testing of a diverse range of theoretical perspectives from economics, education, and sociology, on what influences systemic differences between identically qualified individuals. Furthermore, the aim is to examine how this class wage penalty interacts with other attributes known to influence labour market outcomes, such as gender, age, employment sector, ethnicity, and location. Given the prevailing policy emphasis on education as a means of social advancement, identifying the extent and magnitude of class wage penalties is particularly important from a social equity perspective.

4.3.1 Cultural capital

The literature on the 'class ceiling' highlights how cultural capital helps individuals from upper class origins establish 'fit' in professional and managerial occupations, favours them in the hiring and promotion process, and help build relations and rapport with clients and senior management, all of which can affect individuals' promotion prospects and their remuneration. Thus, cultural capital arguably contributes to the reproduction of income inequality between generations. Bourdieu's work can supplement standard labour economic

approaches and improve our understanding of the social origin pay gap by informing our understanding of the factors and processes through which systems and practices create and perpetuate such pay gaps. For instance, a range of qualitative literature highlights how cultural capital can benefit individuals in the hiring and recruitment process and their chance of promotion over their peers (Ashley and Empson, 2017; Cook et al., 2012; Friedman et al., 2017; Koopman, 2016). In addition, those employed in larger and more 'elite' corporations, such as the Big 4 accounting firms, are more likely to have greater economic, social, and cultural capital (Paisey et al., 2020).

Drawing from a range of research perspectives, this section critiques the contested significance of the family unit as a transmitter of cultural capital. Bourdieu's concept of cultural capital was initially advanced as an instrument for understanding the relationship between social class educational inequalities (Lamont and Lareau, 1998; Savage and Bennett, 2005). In his explanation of educational inequalities, cultural capital is central, constituting an essential element of his larger theory of social reproduction (Goldthorpe, 2007; van de Werfhorst, 2010). As such, Bourdieu (1997) contended that to understand the role of cultural capital in reproducing social class inequalities, we must recognise how it is transmitted across generations. Bourdieu argued that not only is the quantity of cultural capital imperative to such transmission, but the practical time invested by the family, through its economic capital, is also fundamental in ensuring its transmission. Georg (2004) and Gunn (2005) later supported Bourdieu's claim evidencing that incorporated cultural capital emanates in the family of origin and requires a sustained period of investment through systems of inheritance and embodiment. Similar arguments in relation to family resources and efforts have long been advocated from scholars in the field of family economics (Becker, 1981; Browning et al., 2014; Doepke et al., 2019).

In broader terms, 'objectified' cultural capital refers to the legitimisation of certain cultural aspects within society such as theatres, galleries, and museums. These cultural activities are commonly perceived as socially acceptable, viewed as an indicator of class distinction, and recognised as 'legitimate' culture (Kalmijin and Kraaykamp, 1996; Savage et al., 2015). Those from upper class backgrounds possess higher and more diverse volumes of capital due to their distance from the breadline and thus their material conditions facilitate a preference for cultural activities and objects which are independent from the basic

necessities of life (Bourdieu, 1984). Bourdieu (1996) argued that parents of higher occupational status are more likely to possess 'legitimate' tastes that can be directly transmitted to their children. Bourdieu contended that cultural capital has the capacity to reproduce itself through certain privileged skills, tastes, and knowledge which are (re)produced in homes, schools, and related institutional fields (Moore, 2004; Xu and Hampden-Thompson, 2012). Thus, cultural consumption is one instrument through which advantage is relayed from one generation to the next (Bennet and Silva, 2011; Kraaykamp and van Eijck 2010; Lareau, 2003; Lareau and Weininger, 2003; Roksa and Potter, 2011; Silva, 2005; Sullivan, 2001; van Eijck, 1999). For instance, Friedman and his colleagues' (2015) analysis demonstrated that those from upper-class origins are more likely to have a degree and engage in highbrow culture than those who are upwardly socially mobile.

Bourdieu contested that once the explicit channels of transmission become constrained the upper-class explores alternative avenues to bestow their advantage, which is accomplished through cultural resources reproduced through the educational system. Supplementing Bourdieu, Van Eijck (1999) concurred with the findings of Knulst (1992) regarding the 'elitist rearguard', as in those who have been cultivated with highbrow culture and have established firm bonds with this domain, are tenacious in safeguarding their social position. More recently, Major and Machin (2018) claimed the upper-class preserve their status through postgraduate degrees, unpaid internships, and 'exclusive' degrees, i.e., various forms of institutional cultural capital. Such evidence exhibits a direct correlation between social class and educational outcomes and demonstrates how education is utilised by the upper-class to conserve their social position. In contrast to Bourdieu, Goldthorpe (1996) took a more monetary approach to this debate, declaring the need for a focus on secondary rather than primary effects, thus circumscribing his scrutiny to the methods in which families organise their economic resources to safeguard intergenerational advancement. However, Devine (1998) criticised Goldthorpe's theory for omitting cultural and social resources in his framework of the reproduction of advantage, whilst Gunn (2005) argued that culture plays an intrinsic role in the composition of English upper-class families from as far back as 1800 onwards.

A fundamental component to Bourdieu's cultural capital theory is that children from upper-class origins develop a culture that is reconcilable with the schooling culture, as the culture

in the schooling system is compatible with the culture of their homes (van de Werfhorst, 2010). The literature on the class ceiling suggests that individuals from more privileged backgrounds also benefit from such transmissions in professional and managerial occupations, as the culture in such corporate jobs is also analogous to that of their upbringing. However, Bourdieu's theory of cultural reproduction of portraying children as reflective of their parents has been criticised for essentially disregarding the prospect of mobility (Giroux, 1983; King, 2000; Lareau, 1987) and its oversight that some children may have renounced relationships with their parents (Connell et al., 1982). Moreover, Kisida et al. (2014) noted a void in this debate in relation to how children from disadvantaged families can acquire cultural capital when their families do not supply it. This study randomly assigned pupils to an art museum's educational program and evidenced how students from more deprived backgrounds can benefit most from experience in cultural practices. Therefore professing, contrary to Bourdieu, that schools can provide disadvantaged students with purposeful cultural experience. In addition, Kingston (2001) stated that some forms of cultural practices help all students, and not just those from affluent backgrounds. This proposition will be explored in this chapter as we examine the cultural participation levels of all individuals by social origin, including those with undefined social origins, and examine their relationship with wages in the labour market.

4.3.2 Cultural capital in the labour market

Next, this chapter considers cultural engagement and its relationship with labour market outcomes to assess whether engaging in such activities can be converted into economic gain, further perpetuating the advantages of cultural capital for those who already possess it (Bennett and Silva, 2011; Crompton, 2008). The institutionalised form of cultural capital is primarily concerned with academic qualifications, through which their monetary value can be exchanged in the labour market, thus allowing the establishment of conversion rates between cultural capital and economic capital (Bourdieu, 1997). Therefore, Bourdieu argued that once an individual has obtained a degree, this form of institutionalised cultural capital is a feature of an individual that grants tangible benefits in certain fields, particularly in occupational markets (Bennett and Silva, 2011).

For those who have greater economic capital, they invest this in their children's education to equip them with higher educational status that can lead to superior and well-paid jobs

(Friedman et al., 2017; Georg, 2004). Agents have varying economic and cultural means to protract their children's education (Bourdieu, 1997), which ultimately limits the possibilities and prospects for some and potentially confines them to rudimentary employment. However, some have rejected Bourdieu's assumption that the social origin determines one's life trajectory by implying that once secondary school qualification is obtained, the process of attainment and social mobility develop in a more meritocratic way (Georg, 2004; Sullivan, 2001). Moreover, children from families of high cultural capital do not invariably always end up in occupations and pursuing careers which lead to more labour market value (van de Werfhorst, 2010) e.g., the arts.

For Bourdieu, cultural goods and resources are not capitals if they cannot yield profits in the dominant market (Wallace, 2018). Laurea and Weininger (2003) highlighted that cultural familiarity is transmissible across generations and can return benefits or profits in the labour market. Many have contested (Bourdieu, 1984; Hout, 2012) that social origin and educational achievement are firm predictors of cultural consumption and prospective earnings, with Reeves and de Vires (2019) contending that this is one mechanism through which income inequality is multiplied. Others have noted that if Bourdieu's cultural capital theory holds true, then it may partly contribute to understanding inequality of outcomes through explaining the association between family origin and prospective earnings (Blanden et al., 2007; Lamont et al., 2014).

Scholars since the 1990's (Brown, 1995) have been arguing that cultural capital's significance is growing in an eminently competitive labour market. Lareau (2003) affirmed that children from wealthy backgrounds are more prone to cultivate culturally 'legitimate' tastes in their adulthood that can increase the probability of entering professional occupations and being promoted. Other studies have shown that recruiters view cultural consumption as a signal of other desirable traits that are sought by professional and managerial firms, such as cultural knowledge or intellectual inquisitiveness (Ridgeway and Fiske, 2012). In such instances, Bourdieu (1984) argued that cultural consumption comes a particular manifestation of embodied cultural capital. The importance of cultural capital is arguably more important nowadays with the increasing number of university graduates in the UK labour market.

Savage et al. (2015) contended that although universities have become more socially inclusive, this has failed in equalising labour market opportunities as those from working-class origins who do similarly well as their upper-class counterparts are still less likely to secure professional and managerial jobs (Friedman and Laurison, 2019; Macmillan et al., 2014; Zimdars, 2007). More recently, Friedman and Laurison (2019) found that individuals from upper-class origins who graduated from a Russell Group university with a 2:2 degree were still more likely to secure a professional or managerial occupation than those from working-class origins who obtained a first-class degree from a university outwith the Russell Group. This highlights how stemming from a 'higher' social class background and attending a prestigious university can benefit an individual's labour market prospects. This is not to mention that the costs of higher education are understood to be higher for those from working-class origins and the returns of entering the labour market early are perceived to be lower for those from upper-class origins (Findlay and Hermannsson, 2019; van de Werfhorst, 2002).

The qualitative research conducted by Friedman and Laurison (2019) highlights that forms of embodied cultural capital can influence recruiters' perceptions of candidates' skills and their view on candidates' ability to 'fit' in a professional working environment, both of which can also affect their ability to establish relationships with clients. This plays an important role in terms of access and progression within professions such as law and accountancy where such firms often have 'client is King' culture (Spence and Carter, 2014). As firms' top clients are more likely to be upper-class themselves, personal dispositions which mirror highbrow culture positively affect an individual's ability to establish natural and akin relationships with clients. This often leads to individuals from upper-class origins being more successful in interviews, being asked to work on key projects with more senior colleagues, and to work with 'top end' clients, all of which have a positive bearing on individuals' career progression and pay.

Furthermore, Reeves and de Vires (2019) concluded that cultural consumption is positively correlated with earnings, and thus the association between these two may contribute to explaining the relationship between family origin and life outcomes. The authors found that those who consume a larger number of cultural activities are more likely to go on and earn higher wages later in life, to enjoy upward social mobility, and are more likely to receive

promotion. The authors also found that the link between cultural consumption and future earnings was firmest among those who had higher levels of education and those working in professional occupations, suggesting that distinct forms of cultural consumption are valued more in some occupations than others. Other studies show that elite professional service firms, such as law, accountancy, and the creative industries use cultural interests to inform their hiring and recruitment processes (Ashley et al., 2015; Koppman, 2016).

However, this is not to say that those from a working-class background cannot succeed within the educational system and become socially mobile. It is just that young people entering the labour market today face adverse mobility prospects as more affluent families utilise their economic, cultural, and social resources to safeguard their social position (Goldthorpe, 2016). Such contentions may offer a partial explanation to claims that the fluidity from working-class to an 'elite' occupation seldom occurs (Blanford, 2017; Friedman and Laurison, 2019; Major and Machin, 2018). Furthermore, Sullivan (2001) argued that when social mobility occurs it paradoxically bolsters the educational system by contributing to the illusion of meritocracy.

The focus on labour market outcomes demonstrates how the disproportionate levels of cultural capital, acquired through the family unit and amplified through the schooling system, contribute to educational inequalities that are ultimately recognised and utilised in the labour market and thus transformed into economic capital. Therefore, it is in the labour market where the results of the schooling system are realised and where the consequences of disproportionate forms of cultural capital can be observed. With the above evidence highlighting the growing importance of cultural capital in today's labour market, it is arguably an aspect that contributes to the reproduction of income inequality between generations. From these analyses, this chapter argues that consideration of cultural capital as a distinct aspect of the social origin pay gap has explanatory power. The effects of cultural capital have been found to be particularly strong within professional occupations, indicating cultural consumption may matter more in some occupations than others. This chapter aims to explore this hypothesis through analysing data from the UKHLS and examining the impact of cultural engagement on individuals' pay, particularly within professional and managerial occupations.

In summary, these sociological insights offer valuable frameworks for economic analysis of the class pay gap in two ways. Firstly, social capital and cultural capital can simply be thought of as an additional term in a human capital equation i.e., essentially 'more' of a quantity that predicts earnings, but which are only indirectly related to education. Secondly, social capital and cultural capital can help facilitate a better labour market match in that those with high levels of these forms of capital could achieve higher earnings for a given level of human capital through better occupational attainment.

4.4 Data & Methods

The dataset used in this chapter is the United Kingdom Household Longitudinal Study (UKHLS). The UKHLS contains many variables that we can use to proxy for individuals' cultural capital and social capital.

4.4.1 Cultural capital variables

Similar to previous research, cultural capital is measured in two ways; educational attainment and cultural engagement (Friedman et al., 2015; Friedman et al., 2017). The measuring of institutionalised cultural capital (i.e., educational qualifications) was achieved through considering respondents' highest educational or vocational qualification. The acquisition of qualifications is viewed as an indicator of social status and security (David, 1993; Scott, 1991). In Chapter 3, we considered respondents' parents' education i.e. their parents' institutional cultural capital. Studies have found that students from highly educated families are more likely to engage in high-status cultural activities and that parental education has an independent positive effect on students' cultural capital (Turmo, 2004; Wildhagen, 2009).

Although it is fairly straightforward to proxy institutionalised cultural capital, the testing of objectified and embodied cultural capital is ambiguous and has been previously measured in various ways. There is no consensus in the literature as to how one should conceptualise and measure cultural capital (Lareau and Weininger, 2003). However, several studies have measured cultural capital through participation in distinct cultural activities (DiMaggio, 1982; DiMaggio and Mohr, 1985; Dumais, 2002; Katsillis and Rubinson, 1990; Savage et

al., 2013; Sullivan, 2001), which were exemplary measures proposed in Bourdieu's seminal work (Bourdieu and Passeron, 1977).

This chapter follows a similar approach by considering a range of 'highbrow' cultural activities to analyse their impact on individuals' wages. For example, the regressions include a variable that asked respondents if they had attended a museum or gallery in the last 12 months as a measure of objectified cultural capital. This type of measurement has been previously used in several studies (Byun et al., 2012; De Graaf et al., 2000; DiMaggio, 1982; Dumais, 2002; Jæger, 2009; Kaufman and Gabler, 2004; Nagel et al., 2010). We also include a variable that measured whether respondents had attended a classical music performance in the past 12 months, which is also an established measurement of objectified cultural capital (Connelly et al., 2016; Savage et al., 2013). Furthermore, we include a variable that asked respondents if they had read for pleasure (not newspapers, magazines or comics) in the past 12 months. Previous research highlights that cultural capital is more important for reading performance than for other subjects (Chiu, 2010; DiMaggio, 1982; Hampden-Thompson et al., 2008). Research has also demonstrated that reading rather than participation in high culture, such as music activities or arts participation, is more important for success in education (De Graaf, 1986; Goldthorpe, 2007; Lareau and Weininger, 2003). The inclusion of such a variable also provides a partial insight into the family reading environment of respondents, which has been shown to be an important factor in educational attainment (Georg, 2004; Karlson and Birkelund, 2019; McGinnity, 2022). A variable is also included to measure whether the respondent was a member of a book club.

All the cultural capital variables consider in the analysis are listed below:
- Attended a classical music performance
- Ballet
- Been a member of a book club
- Contemporary dance
- Dance, including ballet
- Event connected with books or writing
- Opera/operetta
- Painting, drawing, printmaking or sculpture
- Photography, film or video making as an artistic activity (not family or holiday)
- Played a musical instrument
- Read for pleasure (not newspapers, magazines or comics)
- Rock, pop or jazz performance

- Textile crafts, wood crafts or any other crafts, such as embroidery, knitting
- Used a computer to create original artworks or animation
- Used a public library service
- Visited a museum or gallery
- Written any stories, plays or poetry
- Written music

All variables have dichotomous responses i.e., whether the respondent mentioned or did not mention engaging or participating in the cultural activity. The above variables are asked in waves 2 and 5. We create a variable that considers respondents' answers from either wave using their personal unique identifier (pidp) and 'pull' their answers through into subsequent waves. This allows us to examine to what extent respondents' cultural engagement can explain the pay gap in other waves and not just waves 2 and 5. In the case that a respondent answers a question in both waves 2 and 5, we use respondents' answer in wave 5 as this provides us with more recent data to analyse.

4.4.2 Social capital variables

The UKHLS provides information on respondents' social networks by asking them a range of questions regarding their three best friends, such as their employment status, how they first met, and their ethnicity. The UKHLS also provides information on the proportion of friends with a similar education, similar income, similar job, similar race, and similar age. This provides us with a considerable amount of data to examine respondents' social networks, which we use to proxy for respondents' social capital, and the impact these may have on individuals' labour market outcomes. Social capital can be defined in a number of ways. Fine (2010, p. ix) defined social capital as: "any aspect of the social that cannot be deemed to be economic but which can be deemed an asset". Thus, our social relations and networks can become forms of capital that can accumulate over time and be deployed to our advantage, particularly within the labour market.

A list of all the variables used to proxy for respondents' social capital is provided below:
- Best friend no 1: employment of friend
- Best friend no 2: employment of friend
- Best friend no 3: employment of friend
- Best friend no 1: how first met
- Best friend no 2: how first met

- Best friend no 3: how first met
- Best friend no 1: ethnicity of friend
- Best friend no 2: ethnicity of friend
- Best friend no 3: ethnicity of friend
- Proportion of friends with similar age
- Proportion of friends with similar level of education
- Proportion of friends with similar income
- Proportion of friends who have a job
- Proportion of friends of same race

The above variables are asked in waves 3 and 6. Similar to the cultural capital variables, we create a variable that considers respondents' answers from either wave using their personal unique identifier (pidp) and 'pull' their answers through into subsequent waves. This allows us to examine to what extent respondents' social capital can explain the pay gap in other waves and not just waves 3 and 6, but nonetheless acknowledging that individuals' cultural engagement may change across these waves. In the case that a respondent answers a question in both waves 3 and 6, we use the respondent's answer in wave 6 as this provides us with more recent data to analyse. The data structure of the UKHLS is re-stated below.

Table 4.1: UKHLS Data Structure

Waves	Years
1	2009-2011
2	2010-2012
3	2011-2013
4	2012-2014
5	2013-2015
6	2014-2016
7	2015-2017
8	2016-2018
9	2017-2019

4.5 Descriptive statistics

As shown in Table 4.2, in using data from waves 1 to 9 (2009-2019) this provides us with an analytical sample of 168,878 respondents; this is the same sample that was used in Chapter 3. For this chapter we mainly use the NS-SEC 8 classification for the analysis. Thus, we refer to respondents as stemming from either NS-SEC 1 to NS-SEC 7 origins or having 'undefined' social origins. In this chapter, we focus our attention on social origin and its

relationship with cultural capital and social capital and analyse their impact on respondents' wages.

Table 4.2: Analytical sample

Higher of mother and father's occupation when respondent was aged 14	Freq.	Percent	Cum.
NS-SEC 1: Higher management & professional	20,530	12.16	12.16
NS-SEC 2: Lower management & professional	29,216	17.30	29.46
NS-SEC 3: Intermediate	21,193	12.55	42.01
NS-SEC 4: Small employers & own account	18,202	10.78	52.78
NS-SEC 5: Lower supervisory & technical	12,384	7.33	60.12
NS-SEC 6: Semi-routine	20,764	12.30	72.41
NS-SEC 7: Routine	17,237	10.21	82.62
Undefined social origins	29,352	17.38	100
Total	**168,878**	**100**	

Table 4.3 compares the cultural capital activities of those with defined and undefined social origins. The rows highlighted in grey highlight significant differences between respondents from defined and undefined social origins. This comparison reveals that those with undefined social origins are significantly less likely to engage in 15 of the 20 cultural activities compared to those with defined social origins. This highlights significant difference in cultural engagement between respondents with defined and undefined social origins. Building upon the results from Chapters 2 and 3, which shows that individuals with undefined social origins face greater social and economic disadvantage, this adds further evidence that individuals with undefined social origins are different, at least culturally, from those with defined social origins.

Table 4.3: Comparison of cultural activities between those with defined and undefined social origins

Two-sample t test with equal variances	Defined social origin		Undefined social origin		
	N	Mean	N	Mean	diff
Ballet	17,425	0.038	3,014	0.022	0.017 ***
Classical music performance	17,425	0.073	3,014	0.055	0.018
Computer artworks	17,425	0.092	3,014	0.074	0.018 ***
Contemporary dance	17,425	0.039	3,014	0.03	0.009
Dance including ballet	17,424	0.1	3,014	0.075	0.025 ***
Event book writing	17,425	0.068	3,014	0.051	0.017
Member book club	17,425	0.028	3,014	0.018	0.009 ***
Opera	17,425	0.034	3,014	0.026	0.007
Painting Drawing Sculpture	17,425	0.161	3,014	0.132	0.029 ***
Performed Drama Theatre	17,424	0.03	3,014	0.02	0.01 ***
Photography film video	17,425	0.148	3,014	0.108	0.04 ***
Played musical instrument	17,424	0.127	3,014	0.081	0.046 ***
Read for pleasure	17,425	0.681	3,014	0.576	0.105 ***
Rock pop jazz performance	17,425	0.308	3,014	0.234	0.074 ***
Sang to an audience	17,424	0.06	3,014	0.042	0.018 ***
Textile crafts	17,425	0.19	3,014	0.147	0.042 ***
Used a Public Library	17,425	0.327	3,014	0.301	0.026 **
Visited museum or gallery	17,425	0.437	3,014	0.341	0.096 ***
Written Music	17,424	0.029	3,014	0.021	0.008
Written stories, plays or poetry	17,425	0.06	3,014	0.042	0.018 ***

Next, we examine cultural engagement across each of the social origin groups (NS-SEC 1 to 7 and undefined origins). Table 4.4 presents the levels of engagement in 20 cultural activities by social origin. The grey box represents the highest percentage of all social origin groups, and the blue box represents the lowest percentage of all social origin groups.

Table 4.4: Social origin (NS-SEC 8) and cultural capital

Cultural capital - activity mentioned (%)	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
Ballet	7.22	5.10	4.93	2.73	3.71	2.76	2.02	2.26
Classical music performance	15.70	11.08	9.59	6.76	6.23	3.95	4.74	6.02
Computer artworks	10.90	10.46	9.39	6.97	7.48	6.77	5.58	7.25
Contemporary dance	6.07	4.61	4.09	3.21	3.10	2.45	2.97	2.90
Dance including ballet	10.39	11.14	11.04	9.43	10.63	8.63	8.22	7.67
Event book writing	10.31	10.01	7.55	5.51	5.46	4.46	3.55	5.10
Member of a book club	4.82	4.40	3.27	1.82	2.85	1.54	1.61	2.07
Opera	7.14	4.66	4.20	3.33	3.15	1.76	1.98	2.88
Painting, drawing or sculpture	17.34	17.19	15.63	12.88	11.80	12.95	10.46	12.75
Performed drama theatre	3.13	3.45	2.14	1.68	1.76	1.77	1.05	2.08
Photography, film or video	18.96	18.20	15.72	11.61	12.02	11.78	9.18	11.22
Played musical instrument	19.27	15.97	11.17	8.33	8.75	7.30	6.54	8.12
Read for pleasure	80.01	75.53	74.49	62.22	66.26	61.53	59.04	58.50
Rock, pop or jazz performance	36.08	35.02	34.43	25.41	28.85	22.75	20.86	22.55
Sang to an audience	8.54	7.61	5.93	4.54	4.60	4.60	3.17	4.44
Textile crafts	22.96	22.54	21.20	18.56	19.90	18.14	17.18	15.63
Used a public library	39.20	37.56	31.64	31.31	29.98	28.29	28.30	29.77
Visited a museum or gallery	59.02	53.27	46.83	38.68	40.70	34.40	30.96	34.50
Written music	3.46	3.49	2.10	1.88	1.62	1.37	0.94	2.02
Written stories, plays, poetry	7.24	7.66	5.66	4.13	4.15	4.48	3.06	4.25

There are several things individuals may infer about someone based on their cultural habits and interests with some activities being regarded as more 'highbrow' than others. It would be fair to state that culturally and socially there are differences between playing football compared to playing polo and differences between playing the guitar compared to playing the cello. Some of these cultural activities are more mainstream and are engaged in by the masses whereas some are frequented by a small percentage of the population, particularly those of a high social standing who generally hold high levels of education and income. This section explores the relationship between respondents' cultural engagement and their social origin.

Overall, we observe stark differences for cultural engagement in relation to social origin. Respondents from professional and managerial origins are considerably more likely to report engaging in 'highbrow' cultural activities and those from working-class origins report considerably lower levels of cultural engagement. For instance, for all cultural activities, either those from higher professional and managerial (NS-SEC 1) origins or lower professional and managerial (NS-SEC 2) origins report the highest levels of engagement.

More specifically, respondents from higher professional and managerial (NS-SEC 1) origins report the highest level of engagement in 16 of the 20 cultural activities, and their engagement is particularly high in prominent 'highbrow' cultural activities such as ballet and attending the opera. This highlights that individuals from upper-class origins are more likely to engage in activities that further signal and reinforce their social position, which can in turn benefit them in the labour market and consequently have a positive impact on their pay.

Conversely, respondents from NS-SEC 6 or NS-SEC 7 origins or those with undefined social origins report the lowest levels of engagement for all cultural activities. More specifically, respondents from NS-SEC 7 origins report the lowest level of engagement in 12 of the cultural activities, those from NS-SEC 6 origins the lowest level of engagement in five of the cultural activities and respondents with undefined social origins report the lowest level of engagement in three of the cultural activities. This association between social class and cultural engagement has also been observed in other studies (Gerhards et al., 2013; Katz-Gerro, 2023; Weingartner and Rossel, 2019). Given the wealth of qualitative literature that highlights the benefits of engaging in such cultural activities, this indicates that individuals from working-class backgrounds do not possess the desired forms of cultural capital that are highly sought in professional and managerial firms. This may partly explain the pay gaps we observe as this can have a detrimental impact on individuals in the hiring and recruitment process, the promotion process, and their ability to build rapport with clients and senior management, who are disproportionately from professional and managerial origins (Friedman and Laurison, 2019).

We also observe that those from NS-SEC 3 (intermediate) origins report considerably high levels of cultural engagement, however this is not the case for those from NS-SEC 4 (self-employed) origins. This highlights an important difference in cultural participation between those from 'intermediate' origins - commonly referred to when using the NS-SEC 3 classification. Thus, it highlights a benefit in using the NS-SEC 8 classification for this type of analysis as using the NS-SEC 3 classification here would mask the differences between these two groups. At least culturally, those from NS-SEC 3 and NS-SEC 4 origins appear different. In Chapter 3, we observed significant pay gaps for those from NS-SEC 4 origins, which may be explained by the precarious/routine nature of these respondents' parents'

employment and working conditions. Given we observe low levels of cultural engagement for this group, which is most similar to those from routine (NS-SEC 5-7) origins, this arguably provides further evidence that those from NS-SEC 4 origins are similar to those from working-class origins, which may partly explain the pay gaps we observe for this group. Another group that are similar to those from routine origins are those with undefined social origins.
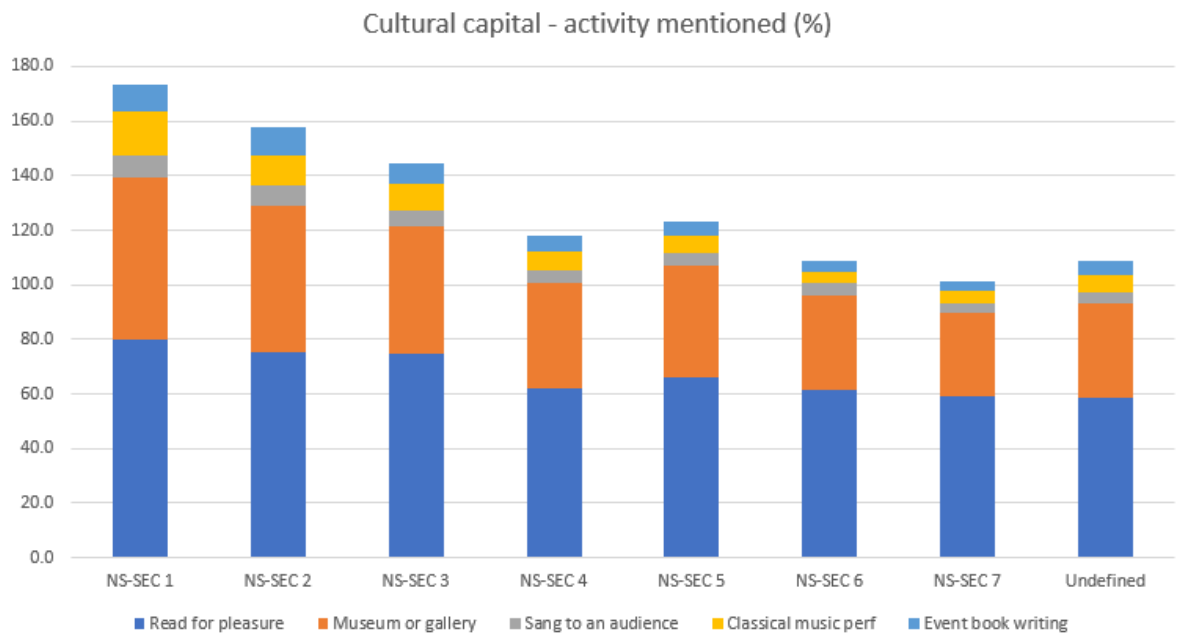
Overall, respondents with undefined social origins generally report similar levels of cultural engagement to those from NS-SEC 6 and NS-SEC 7 origins (i.e., those whose parents worked in semi-routine and routine occupations respectively). In Chapter 2 we used the LFS to examine item non-response for social origin and found that the observable features of those with undefined social origins were most similar to those from SOC 9 origins (those whose parents were employed in 'elementary' occupations), albeit more socially and economically disadvantaged. The results above highlight that, at least culturally, those with undefined social origins are more alike those from 'routine' origins (i.e., those whose parents worked in jobs such as labourers, cleaners, factory workers etc.). This may add further evidence to the argument that those with undefined social origins can be thought of as a sub-section of the working class. Given the abundance of qualitative literature that highlights the role of cultural capital in the labour market, this may offer a partial explanation for the pay gaps we observe for respondents with undefined social origins.

The above has discussed the results for cultural engagement in relation to social origin more broadly. Some of the cultural activities listed in Table 4.4 are more 'highbrow' than others e.g., ballet and opera, however some are arguably more influential for an individual's life outcomes such as reading for pleasure. For instance, Georg (2004) and Kisida et al. (2014) found that family reading behaviour and habits are most important for children's educational performance, which is less related to socio-economic position, and not participation in formal cultural activities. Furthermore, others have shown that cultural capital is imperative for subjects in which reading constitutes part of its examination (Chiu, 2010; DiMaggio, 1982; Hampden-Thompson et al., 2008).

We observe considerable differences by social origin for respondents reporting that they read for pleasure. For instance, 80% of respondents from higher professional and managerial (NS-

SEC 1) origins report reading for pleasure, whereas this figure is 58.5% for respondents with undefined social origins. Of all cultural variables, we observe the largest difference in percentage terms by social origin for reading for pleasure. Furthermore, the results are almost linear in that for each 'higher' level in the social origin classification, we observe a higher percentage mentioning that they read for pleasure, with the exception being those from NS-SEC 4 origins, which again report similar results to those from routine origins. These results may be explained by differences in reading abilities during childhood and adolescence (Cooper and Stewart, 2020; Duncan et al., 2007; McGinnity et al., 2022; Schubert and Becker, 2010), which spills over into adulthood, thus impacting cognitive ability and adult development (Erola et al., 2016; Smeeding et al., 2011) and consequently individuals' prospects in the labour market.

Figure 4.1: Cultural engagement by social origin (1)

Cultural capital - activity mentioned (%)

Legend: Read for pleasure, Museum or gallery, Sang to an audience, Classical music perf, Event book writing

Figure 4.2: Cultural engagement by social origin (2)

Cultural capital - activity mentioned (%)
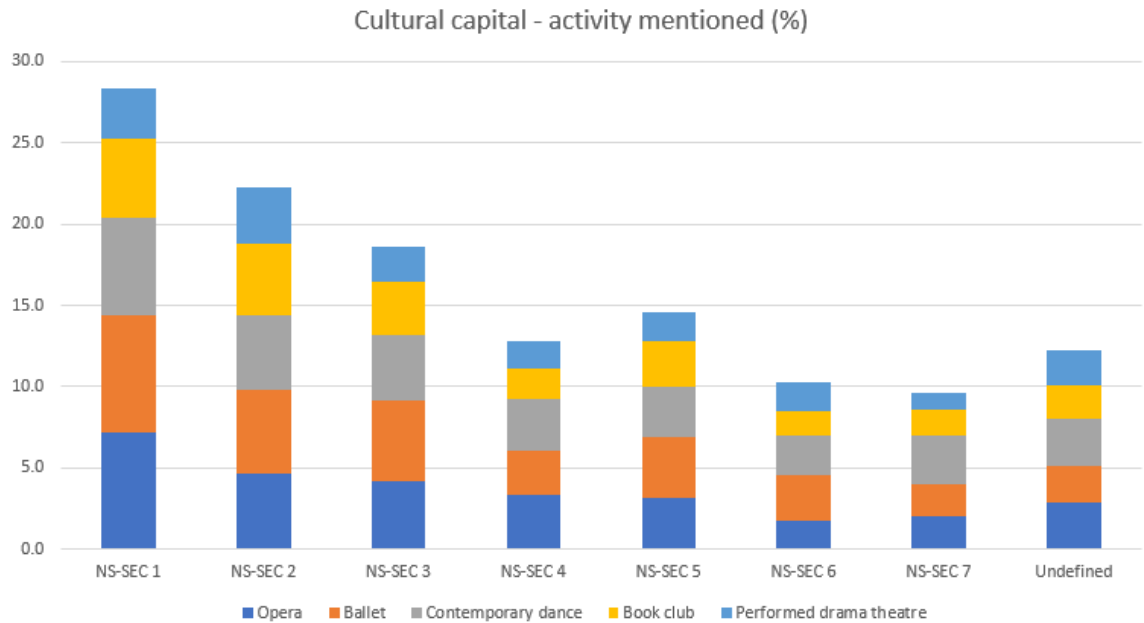
Figure 4.1 and Figure 4.2 show the levels of engagement in arguably 10 of the most 'highbrow' culture activities – except for reading for pleasure – by social origin. The x-axis shows the social origin groups and the y-axis shows the percentage of cultural engagement. The results show those from NS-SEC 1 have the highest levels of cultural engagement and those from NS-SEC 7 report the lowest levels of cultural participation. Given we observe the highest levels of cultural engagement for respondents from higher professional and managerial (NS-SEC 1) origins, and the lowest levels of cultural engagement for respondents from NS-SEC 6, NS-SEC 7 and undefined social origins, the results highlight a clear association between 'highbrow' culture and social origin.

4.5.1 Total cultural engagement

Above we have examined each cultural activity in relation to respondents' social origin. While this is informative, it does not tell us about a respondent's 'total' level of cultural engagement. To provide us with a measurement of individuals' 'total' level of cultural engagement, we create a variable that combines the number of activities a respondent has reported engaging in. We then recode those who mentioned engaging in none to three cultural activities as 'low', those who mentioned engaging in four to six cultural activities as 'moderate' and those who engaged in seven or more cultural activities as 'high' cultural engagement. Table 4.5 shows that around two-thirds of the sample report engaging in three

or less cultural activities, almost a quarter reported engaging in four to six cultural activities and less than 10% report engaging in seven or more cultural activities.

Table 4.5: Levels of cultural engagement

	Freq.	Percent	Cum
Low (respondents who mentioned 0-3 cultural activities)	143,956	67.4	67.4
Moderate (respondents who mentioned 4-6 cultural activities)	50,455	23.6	91
High (respondents who mentioned 7+ cultural activities)	19,279	9	100
Total	213,690	100	

Next, we examine respondents' total level of cultural engagement by social origin. For 'high' cultural engagement the results are linear for those who have an identified social origin i.e., individuals who stem from a 'higher' social origin report a higher level of cultural engagement. Those from higher professional and managerial (NS-SEC 1) origins report the highest percentage of 'high' total cultural engagement and those from NS-SEC 7 origins report the lowest percentage for this category. For instance, Figure 4.3 shows that almost half of those from NS-SEC 1 origins report 'high' levels of cultural engagement, whereas almost half of those from NS-SEC 7 origins report 'low' levels of cultural engagement. Conversely, those from NS-SEC 1 origins report the lowest levels of 'low' cultural engagement and those from NS-SEC 7 origins report highest levels of 'low' cultural engagement. This highlights a clear relationship between cultural engagement and social origin and that those from upper-class origins are much more likely to engage in distinct cultural activities. This relationship is further tested in the results section to examine to what extent this impacts individuals' wages.

Those with undefined social origins report a higher percentage of engaging in a 'high' number of cultural activities than those from NS-SEC 6 and 7 origins but a lower percentage than all other NS-SEC groups. Overall, their levels of cultural engagement are broadly similar to those from working-class origins. This highlights that culturally, those with undefined social origins are more alike those from routine origins. Given individuals from working-class backgrounds are less likely to engage in 'highbrow' culture and those with undefined social origins largely report similar levels of cultural engagement, this again adds further weight to the argument that those with undefined social origins can be thought of as a sub-section of the working class.

Figure 4.3: Level of cultural engagement by social origin
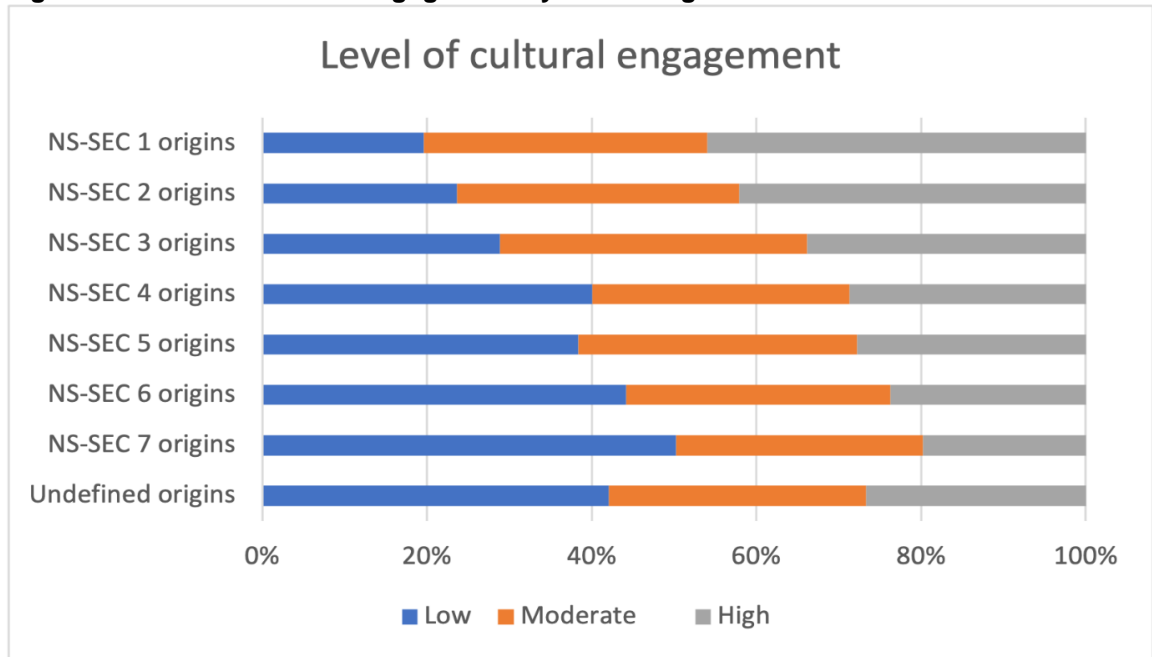
This section highlights a clear relationship between social origin and cultural capital and offers possible explanations as to how this might influence individuals' labour market outcomes. However, as previously discussed, often our cultural interests and social networks are intertwined and influence each other. Individuals' social networks has also been shown to play a role in the social origin pay gap and thus will be examined next.

4.5.2 Social capital

In this section, we examine respondents' social capital by in relation to their social origin and discuss to what extent these may influence respondents' labour market outcomes, which has been acknowledged as a limitation in previous related research (Britton et al., 2019; Crawford and van der Erve, 2015; Friedman and Laurison, 2017; Hällsten, 2013; Laurison and Friedman, 2016). Firstly, we examine the social networks of respondents by those with defined and undefined social origins. We create an indicator variable for best friends' employment status with a value of one equal to best friend is employed and a value of zero for all other categories i.e., part-time employment, unemployed, full-time education/full-time housework, and fully retired. We do so as having friends in employment would generally be regarded as beneficial in the labour market. We also create an indicator variable for how respondents first met their best friends with a value of one equal to those who met their best friends at university or through an organisation or activity and all other categories

equal to zero. We do so as forming friendships at university or through some of the highbrow cultural activities listed above may indicate these respondents would have a highly educated network and friends who have 'high' levels of cultural capital, both of which would be advantageous in the labour market. We do not include this variable in the regressions due to its high number of missing values, but we examine this in relation to respondents' social origin in the descriptive section. The grey columns highlight significant differences in respondents' social capital between those with defined and undefined social origins.

Table 4.6: Social origin and social capital

Two-sample t test with equal variances	Defined social origin		Undefined social origin		
	N	Mean	N	Mean	diff
Best friends' employment status	149,743	1.337	24,283	1.253	0.084 ***
How respondents first met their friends	19,785	0.251	3,342	0.249	0.002
Prop of friends with similar education	169,321	0.344	27,973	0.359	-0.015 ***
Prop of friends with similar employment status	169,647	0.42	28,069	0.356	0.065 ***
Prop of friends with similar employment income	165,367	0.142	27,173	0.151	-0.009 ***

We observe significant differences between those with defined and undefined social origins for best friends' employment status and the proportion of friends with similar education, employment status, and income. This highlights that respondents with undefined social origins are less likely to have friends who are employed, and less likely to have friends with high levels of education and income. This indicates that respondents with undefined social origins have less supportive networks to draw upon which could prove detrimental in the labour market. This may partly explain some of the economic disadvantages we see faced by this group in the labour market. However, Table 4.6 compares those with undefined social origins to all defined social origin groups (NS-SEC 1-7), thus the sample sizes of the two groups are very different. As we have observed in Chapters 2 and 3, there is significant differences in respondents' life outcomes in relation to their social class background. Thus, we provide a breakdown of each of the social capital variables across all social origin groups. Firstly, we examine the employment status of respondents' three best friends by social origin.

Table 4.7: Employment status of respondents' three best friends

Employment of respondent's best friends	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
Best friend no 1: Full-time employment	64.44	62.12	61.13	58.09	58.68	56.33	56.51	54.83
Best friend no 1: Unemployed	3.74	4.87	4.10	5.80	6.18	6.96	8.63	9.44
Best friend no 2: Full-time employment	63.55	62.58	61.54	59.12	59.11	58.35	57.79	54.72
Best friend no 2: Unemployed	4.17	4.44	4.32	5.41	5.82	6.75	8.14	8.96
Best friend no 3: Full-time employment	64.50	62.56	60.99	58.05	58.62	56.32	57.41	54.60
Best friend no 3: Unemployed	3.59	4.69	3.94	5.79	6.37	7.28	8.28	9.31

Overall, we observe a clear relationship between the employment status of respondents' best friends by social origin. Individuals from a 'higher' social origin are more likely to report and those from a 'lower' social origin are less likely to report that their best friends are in full-time employment. For example, individuals from higher professional and managerial (NS-SEC 1) origins report having the highest percentage of friends in full-time employment for all three best friends (approximately two-thirds) and conversely respondents with undefined social origins report the lowest percentage of best friends in full-time employment (55%). This highlights that respondents from professional and managerial origins have social relations which are more economically secure, which may in turn benefit them through directly and/or indirectly providing them with more valuable information and/or employment opportunities. On the other hand, it also highlights that respondents with undefined social origins are less likely to have friends in full-time employment, which may prove detrimental in times of job searching and for gaining access to information in the labour market that can impact their labour prospects.

Next, we examine respondents' best friends who are unemployed. We observe the opposite results from respondents' friends being in full-time employment, which again highlights a clear relationship between employment status and social origin. For instance, respondents with undefined social origins report the highest percentage of friends unemployed for all three best friends (around nine per cent) and conversely respondents from higher professional and managerial (NS-SEC 1) origins report the lowest percentage of friends unemployed for all three friends (around three to four per cent). This highlights that individuals from non-traditional/fragmented upbringings are approximately three times more likely to have friends who are unemployed in comparison to those from higher professional and managerial (NS-SEC 1) origins. This may influence respondents' labour market outcomes, as individuals whose best friends are unemployed are less likely to have

access to valuable information regarding vacancies, job searching, preparing for interviews etc., and how to navigate the labour market during times of recessions and economic uncertainty.

These results suggest stark differences in 'information' capital by social origin. Given we observe almost linear results by social origin for respondents three best friends being in full-time employment and being unemployed, it is clear to see differences in respondents' social support networks and how these differing forms of social relations can play a role in influencing their labour market outcomes. Not only are those from professional and managerial origins more likely to have friends who are in full-time employment and less likely to have friends who are unemployed, they can also acquire valuable information regarding the labour market from their parents given their high occupational status and high levels of education. This has been shown to influence career decision making among adolescents (Smyth, 2022) but can also play a role in the labour market, in terms of job searching, writing application forms and CVs, preparing for interviews etc. (Major and Machin, 2018).

Table 4.8: How respondents first met their three best friends

How respondents first met their friends	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
Best friend no 1: In the neighbourhood	7.12	9.98	7.94	12.15	10.04	10.26	12.34	12.86
Best friend no 2: In the neighbourhood	5.25	8.79	7.35	7.36	7.77	10.22	7.69	9.91
Best friend no 3: In the neighbourhood	8.67	6.69	8.12	8.57	7.72	6.20	5.22	9.67
Best friend no 1: At school	20.31	20.05	22.66	22.23	19.51	20.40	21.48	28.22
Best friend no 2: At school	14.35	16.65	14.06	18.93	19.33	16.59	14.85	20.90
Best friend no 3: At school	16.05	17.91	12.83	18.41	16.07	16.30	15.16	21.99
Best friend no 1: College or University	15.86	11.72	10.07	8.54	6.53	7.65	9.10	9.68
Best friend no 2: College or University	16.13	14.59	9.94	8.40	8.12	8.02	8.54	11.49
Best friend no 3: College or University	8.82	13.19	8.40	8.12	6.69	6.88	5.44	10.49
Best friend no 1: At work	16.60	18.69	18.66	21.81	26.20	21.75	20.08	15.31
Best friend no 2: At work	22.20	20.17	24.29	21.47	20.56	23.71	25.95	19.67
Best friend no 3: At work	20.11	20.42	21.96	23.14	18.43	24.27	23.21	18.73
Best friend no 1: Via an organisation	5.87	4.74	4.32	3.43	2.61	2.66	2.19	2.74
Best friend no 2: Via an organisation	4.99	4.05	5.32	4.59	3.00	3.49	2.51	2.40
Best friend no 3: Via an organisation	9.16	4.51	3.23	3.05	4.12	2.81	2.28	2.69

The UKHLS also provides information on how respondents first met their best friends. This provides us with an insight into how respondents' social networks were initially formed.

Respondents select one answer from the following that best describes how they met their first/second/third best friend: he/she is a relative, through my family, at work, in the neighbourhood, at school, at college or university, through friends, through my religious community, at a pub or club, through the Internet, while travelling or on holiday, through an organisation or activity.

Overall, respondents from professional and managerial origins are more likely to have met their best friends at college or university or through an organisation and those from routine and undefined social origins are least likely to have met their best friends at university or through an organisation. This indicates individuals from upper-class origins are more likely to have networks that hold similar levels of education i.e., also university educated. This could prove beneficial post-graduation when entering the labour market as individuals from professional origins not only have their parents to draw upon for advice and information but can also turn to their friends for guidance and support in the labour market. This could prove invaluable when individuals are initially entering the labour market post-graduation as social capital complements human capital and can help individuals secure a professional job (Macmillan et al., 2014; Wakeling and Savage, 2015) which in turn reinforces their stock of human, social, and cultural capital. Such networks can also prove useful in the long run when seeking out new opportunities, promotions, and how to successfully negotiate starting salaries and pay rises, thus again highlighting the disparities in information capital by social origin. However, it is also important to acknowledge that those from professional origins are more likely to go to university, in absolute terms, thus they are more likely to form friendships at university.

Furthermore, respondents from higher professional and managerial origins are most likely to have met their best friends through an organisation or activity. The UKHLS does not provide information or examples of what such organisations or activities might be, but such relations could be formed through the 'highbrow' activities listed above such as the opera, theatre or a book club, or through a range of sporting activities such as meeting similarly affluent people at the golf club, the tennis club, or through other 'highbrow' sports such as horse riding or polo. Individuals from upper-class origins are more likely to engage in more 'highbrow' culture activities, as evidenced in Table 4.4 and Figure 4.3 and through these engagements they meet other high-status individuals which reinforces their social standing

and expands their social networks. In terms of organisations that people meet, they may include but are not limited to, organisations regarding political affiliations/donations, groups/networks regarding land ownership, organisations through the financial sector, groups through the business community, and political lobbying groups. Forming relations through such organisations and activities can provide individuals with easier and greater access to professional networks that can precipitate career success. Similar to the networks acquired through private education, these organisations and activities can also give individuals greater extra-curricular opportunities to enhance and develop their CV's and help bolster their social skills and aspirations (Kirby, 2016). A range of studies shows that children from more affluent origins benefit from the networks they acquire through their upbringings and the networks they inherit through their parents (Friedman and Laurison, 2019). This highlights the importance of developing social networks and relations beyond our local area/neighbourhood, which as shown above, is most common for individuals from working-class origins and those with undefined social origins. These networks and relations could place individuals from professional backgrounds at an advantage over their equally qualified working-class counterparts, coupled with their parents being more likely to hold higher levels of education too.

On the other hand, respondents from routine origins are more likely to have met their best friends at work, and respondents from routine and undefined social origins are more likely to have met their friends either in the neighbourhood or at school. Conversely, those from professional and managerial origins are least likely to have met their best friends in the neighbourhood. This may suggest the social circles of those from working-class origins are not as large as those from professional origins and may be confined to their local area. This may also be explained by respondents' lack of mobility, in that those from working-class origins are more likely to live in the areas they were reared in and have less economic capital to relocate for university or work. On the other hand, it may also indicate more cohesion within working-class communities in that relations that form at an early age are long lasting. Also, given we observe that respondents from professional and managerial origins are least likely to have met their best friends in the neighbourhood, this may add further weight to the argument that the social ties within working-class and upper-class communities differ.

Table 4.9: Ethnicity of respondents' three best friends

Ethnicity of respondent's best friends	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
Best friend no 1: White	88.00	86.65	89.11	78.30	88.63	86.95	83.86	82.58
Best friend no 2: White	87.14	86.26	89.28	78.99	89.34	85.77	83.39	82.84
Best friend no 3: White	88.24	87.61	89.55	81.40	90.46	87.17	84.54	84.67

For respondents' three best friends, we observe that those from NS-SEC 4 (small employers & own account i.e., self-employed) report the lowest percentage of best friends who are white. As we observed in Chapter 3, 71.4% of respondents from NS-SEC 4 origins are white, the lowest of all social origin groups, and they report the highest percentage of respondents who are Indian, Pakistani, from 'any other Asian background', Arab, 'any other black background', and Irish. This indicates that respondents from NS-SEC 4 origins are more likely to form friendships with those who are demographically similar. In addition, those with undefined social origins report the second lowest percentage of best friends who are white, which may indicate their social circles are more ethnically diverse. Given the double forms of disadvantage for those from NS-SEC 4 origins found in Chapter 3, the intersection between social class and ethnicity may be explaining some of the disadvantage we observe for those with undefined social origins. Respondents from NS-SEC 3 and NS-SEC 5 origins report the highest percentage of best friends who are white, however there is not a huge amount of variation. We also consider the proportion of friends that are of same race (see Table 4.11) to further explore this relationship.

Above we have considered the employment status of respondents' best friends, how they first met and their ethnicity. Next, we turn our attention to the proportion of respondents' friends who have are of a similar age, similar race, have similar levels of education, similar levels of income, and the proportion who have a job. The additional benefit of examining these variables is that they capture the proportion of respondents' friends who have similar levels of income, education etc. and not just their three best friends. This provides a further insight into respondents' broader social networks and not just their closest friends.

Table 4.10: Proportion of respondents' friends with similar age

Proportion of friends with similar age	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
All similar	29.62	31.81	33.22	34.59	35.88	36.53	35.31	34.16
More than half	43.00	40.30	38.53	34.10	33.20	31.41	29.73	33.36

It may be difficult to discern what age has to do with social origin and labour market outcomes but there does appear to be some association. For instance, individuals from professional and managerial backgrounds (more so those from NS-SEC 1 origins) report the lowest percentage of proportion of friends who are of similar age and those from routine origins report the highest percentage. This may indicate the individuals from professional origins are more likely to have friends who are older which may be explained through inheriting their parents' networks and/or forming relations with people more senior in some of the organisations and activities discussed above. Having older friends indicates individuals from professional origins have more personal relations that are senior which can be beneficial in the workplace, possibly operating through a networking effect. In the case that those from professional origins have more friends who are older this may mean they are more likely to have friends who have similar or higher levels of education and income and are more senior in their career which may prove beneficial in the labour market. On the other hand, it may also suggest that respondents from professional and managerial origins are more likely to have younger friends. However, the results of respondents reporting that more than half of the proportion of their friends are of similar age indicate otherwise.

Although the relationship between social origin and the age of respondents' friends is to an extent ambiguous, we observe an association for respondents that report that more than half of their proportion of friends are of a similar age. We observe almost the opposite results compared to proportion of friends that are all similar in that the results are linear for those with defined social origins, with those with undefined social origins report a similar percentage to those from NS-SEC 5 origins. For instance, those from higher managerial and professional origins (NS-SEC 1) report the highest percentage for having more than half their friends being of similar age and those from NS-SEC 7 origins report the lowest percentage. This may be explained by those from professional origins being most likely to form relations at college or university, thus making friends with people of a similar age, or may indicate the relationships they form through organisations and activities are in most cases with others who are of a similar age.

Table 4.11: Proportion of respondents' friends of same race

Proportion of friends of same race	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
All the same	36.92	39.96	44.52	47.44	52.75	48.35	49.41	50.63
More than half	47.89	44.06	41.44	34.00	32.72	33.25	30.94	32.30

We observe that respondents from NS-SEC 5 origins report the highest percentage of proportion of friends who are all the same race, followed by those with undefined social origins, and those from higher professional and managerial origins (NS-SEC 1) report the lowest percentage. We see a considerable difference from the highest percentage of those from NS-SEC 5 origins at 53% to those from NS-SEC 1 origins at 37%. The percentage of those with undefined social origins is again most similar to those from routine origins. This may be due to those from working-class origins being more likely to form relations at school and in the neighbourhood and therefore are more likely to meet and form friendships with people who are demographically more alike. Respondents from NS-SEC 1 origins report the lowest proportion of friends of the same race that may indicate they have more ethnically diverse social networks. This may be explained by their higher engagement in organisations and distinct cultural activities that may naturally increase their chances of meeting and engaging with people who are more demographically diverse. Also, it may be explained by their higher percentage of best friends they first met at university, which again could increase the likelihood of meeting others who are of a different racial background. The diversity of their social circles may 'open up' other opportunities which might not present themselves otherwise if their networks were overwhelmingly more demographically akin. It may also increase their cultural knowledge and understanding which can be utilised in interview settings, in the workplace, and when dealing with a broad and diverse range of clients.

Similar to proportion of friends who are of a similar age, we observe almost the opposite results for 'more than half' in that those from higher professional and managerial origins (NS-SEC 1) report the highest percentage of respondents who more than half are of a similar race and those with undefined social origins report the lowest percentage followed closely by those from NS-SEC 5 origins. Therefore, while those from NS-SEC 1 origins report the lowest percentage for 'all the same' race they do report the highest percentage for 'more than half' of their friends are of the same race indicating their social circles may not be as ethnically diverse as first thought.

Table 4.12: Proportion of respondents' friends with similar level of education

Proportion of respondents' friends with similar level of education	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
All similar	28.66	29.52	33.43	35.34	39.23	38.42	38.53	36.27
More than half	43.52	40.44	36.67	32.87	31.50	29.95	30.44	33.25

Next, we examine the proportion of respondents' friends with similar levels of education. We observe that respondents from routine origins (NS-SEC 5-7) report the highest percentage of proportion of friends who have similar levels of education and respondents from professional and managerial origins report the lowest percentage; those from NS-SEC 1 origins followed by those from NS-SEC 2 origins. Given that those from working-class origins generally hold lower levels of education in comparison to those from professional origins, as we observed in Chapters 2 and 3, this suggests that individuals from routine origins are more likely to have networks that also hold low levels of education. This suggests individuals from routine origins are less likely to have friends who are degree holders which may mean they are less likely to have people they can turn to for advice, guidance, and assistance with things like writing CV's and application forms, preparing for interviews, and negotiating pay. Moreover, Chapter 3 highlighted the association between parental education and individuals' labour market outcomes. Research shows that individuals from upper-class backgrounds benefit from having more educated parents who can help them with their university applications, personal statements, CVs, and navigating the university system such as understanding entry requirements and degree options (Major and Machin, 2018). The same is true in the labour market as individuals go through periods of job searching, job applications, and preparing for interviews. Once in a job, individuals ultimately require a network of people that can assist their career progression, and in most cases, this is easier when an individual is surrounded with educated people in similar occupations. Therefore, the results from Chapter 3 and this chapter indicate that individuals from upper-class origins are more likely to have highly educated parents and highly educated networks.

In contrast, we observe almost the opposite results for respondents reporting that more than half of the proportion of their friends have similar levels of education. While we observe that respondents from professional and managerial origins report the lowest percentage of proportion of friends for 'all similar' levels of education, they do report the highest percentage for 'more than half' of friends who have similar levels of education. For instance, those from higher professional and managerial origins (NS-SEC 1) report the highest percentage at 43.5% and those from NS-SEC 6 report the lowest percentage at 30%. As we observed in Chapter 3, respondents from professional and managerial origins are more likely to hold higher levels of education with 46.5% holding a degree compared to 16.6% of respondents from routine origins. Thus, the results from Table 4.12 shows that for

respondents from professional and managerial origins, 43.5% of their friends hold similar levels of education, which for almost half this group is university level. Furthermore, the results are almost linear for respondents with defined social origins in that for each additional 'level' in the social origin classification, respondents report a higher percentage of friends who hold similar levels of education. As discussed above there are several benefits to having a highly educated network, which in this case is more so the case for respondents from professional and managerial backgrounds. Contrast this to those from NS-SEC 6 origins for which almost 30% report that more than half their friends hold similar levels of education, indicating that almost one third of their friends also hold low levels of education.

The results for 'all similar' and 'more than half' of respondents' friends levels of education are pulling in opposite directions, but the two main points we wish to highlight are that respondents from routine origins report the highest percentage for 'all similar', indicating their networks are more likely to be less educated, and those from professional origins report the highest percentage for 'more than half', indicating that almost half their networks hold a degree.

Table 4.12 provides an insight into the education levels of respondents' social networks in relation to their social origin. While educational attainment is a strong predictor of income (Becker, 1964; Schultz, 1960), considering respondents' friends' employment status and the proportion of friends who have similar levels of income is also important for the analysis. This provides a further insight into respondents' social networks and how they may influence their labour market outcomes.

Table 4.13: Proportion of respondents' friends who have a job

Proportion of respondents' friends who have a job	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
All of them	44.45	42.49	43.01	42.15	42.67	40.78	36.07	35.04
Less than half	8.38	9.02	10.71	12.20	14.48	13.84	15.11	15.18

Similar to the employment status of respondents three best friends, we observe clear differences in the proportion of friends who have a job by social origin. The results are fairly linear in that those who stem from a 'higher' social origin report a higher percentage of all their friends being employed, whereas those from more routine origins report a lower percentage. For instance, almost 45% of respondents from higher professional and

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managerial (NS-SEC 1) origins report that all of their friends have a job, which is the highest percentage of all social origin groups, whereas this figure is 35% of respondents with undefined social origins, the lowest percentage of all social origin groups. Again, this highlights that individuals from more professional and managerial origins are more likely to have social networks that have more employment and income stability which may also provide them with greater financial support.

Conversely, we also observe almost linear results by social origin for respondents who report that less than half their friends have a job, in that those from professional and managerial origins report the lowest percentages and those from routine and undefined social origins report the highest percentages. For instance, only eight per cent of respondents from higher professional and managerial (NS-SEC 1) origins report that less than half their friends are in employment, whereas this figure is almost double for those with undefined social origins. This highlights that individuals with undefined and routine origins are much more likely to have social relations that are not as economically stable as those from professional and managerial origins. Again, this may contribute to individuals' level of 'information' capital in the labour market and their (in)ability to seek financial support from friends.

Table 4.14: Proportion of respondents' friends with similar income

Proportion of respondents' friends with similar income	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
All similar	11.92	11.63	12.81	15.30	17.64	16.36	17.27	15.37
More than half	34.45	33.98	33.08	31.36	28.35	29.04	29.84	30.44

We observe similar results for the proportion of friends with similar income to the proportion of friends with similar levels of education in relation to social origin. For instance, respondents from routine origins (NS-SEC 5-7) report the highest percentage and respondents from professional and managerial origins report the lowest percentage for proportion of friends who have similar levels of income. Given those from working-class origins have lower levels of income in comparison to those from professional origins, as we observed in Chapters 2 and 3, this suggests that individuals from routine origins are more likely to have social networks that also have low levels of income. This highlights that individuals from working-class origins have less affluent networks and may have less people to rely on for financial support. This is particularly important in today's labour market considering the rise of precarious work and zero-hours contracts (Office for National

Statistics, 2023) and the number of working people living in poverty (Joseph Rowntree Foundation, 2023) who may rely on other sources than their wages to make ends meet. This would also prove crucial during periods of unemployment or for those employed in precarious work and zero hours contracts who are moving between jobs who may experience a period of no income.

Again, similar to the proportion of friends with similar levels of income, we observe the opposite results for respondents reporting that more than half of the proportion of friends have similar levels of education. The results are almost linear for respondents with identified social origins in that for each additional 'level' in the social origin classification, respondents report a higher percentage of friends who hold similar levels of income. For instance, those from higher professional and managerial origins (NS-SEC 1) report the highest percentage at 35% and those from routine (NS-SEC 5-7) origins report the lowest percentage at 28 and 29%, followed closely by those with undefined social origins at 30%.

Many studies have examined the association between social origin and education and income, but this chapter extends this by also considering the education and income of individuals' networks in relation to their social origin. The above two sections highlight a correlation between the education levels and income of respondents' social networks in relation to their social origin. Overall, this section highlights a clear cultural consumption gradient and an insight into individuals' social networks. However, is this purely a class effect or is it confounded by income and education? The next section takes the analysis a step further by examining cultural capital and social capital in relation to the social origin pay gap.

4.6 Results & Discussion

Similar to Chapter 3, this chapter also uses data from waves 1 to 9 (2009–2019) of the UKHLS to examine the social origin pay in the UK labour market, but more so to examine to what extent cultural capital and social capital explains the pay gap. Based on the results from Chapter 3 and in line with previous research, we use the dominance approach to proxy for social origin i.e. we take the 'higher' of respondents' mother and father's occupation when they were 14. We adopt an OLS approach to ensure the form of the regressions are consistent and provide a straightforward way to interpret the results. This allows for the

exploration of any variation in the pay gap over a ten-year period, thus facilitating the examination of whether the pay gap was larger immediately after the 2008 recession or whether it has increased in more recent years. This also enables us to infer if the importance of other factors beyond education has grown in importance over time. We also use random effects modelling to analyse the pay gap longitudinally. We start the analysis by analysing the 'raw' class effect with basic demographics such as sex, disability, ethnicity etc., then consider the cultural capital and social capital variables, then account for educational attainment and labour market observables such as work sector, firm size etc.

4.6.1 Models

Model equation - $\ln(w) = \alpha + \beta_i S_j + \gamma_1 X + \gamma_2 X^2 + \delta_j C_k + \varepsilon$

- $\ln(w)$: logarithm of gross monthly pay
- S: Social origin dummies (proxied via respondents' 'highest' parental occupation aged 14)
- X: Age
- C_k: Controls -
    - Demographics – age, age squared, sex, disability, ethnicity, region, urban/rural, year of study (longitudinal analysis – add *Wit* to the wage equation)
    - + Cultural capital or social capital proxies
    - + Educational attainment – highest educational qualification
    - + Labour market variables – work sector, permanent/temporary job, firm size, managerial duties, and occupational status (NS-SEC category)

Models:

1. Cultural capital
    - Cross-sectional analysis (wave 9)
    - Cross-sectional analysis (waves 1 to 9)
    - Longitudinal analysis (waves 1 to 9)

2. Social capital
    - Cross-sectional analysis (wave 9)
    - Cross-sectional analysis (waves 1 to 9)
    - Longitudinal analysis (waves 1 to 9)

4.6.2 Cultural capital

4.6.2.1 Cross-sectional analysis

Firstly, we present the 'cultural capital' model. Table 4.15 reveals estimates for these progressively more elaborate wage equations for wave 9. We present the results from wave

9 (2017 - 2019) as it provides the most recent data. The results from waves 2 to 8 are shown in Appendix Tables 16 to 22. A summary of the results from all waves is shown in Table 4.16. Respondents from higher managerial and professional origins (NS-SEC 1) are omitted as the reference category in all waves. Similar to Chapters 2 and 3, we firstly present the demographics model that captures the 'raw' social origin pay gap. To reiterate, we observe the biggest pay gap for those from NS-SEC 7 origins at 37.2%, followed by those with undefined social origins at 35.9%. Those from lower managerial and professional origins (NS-SEC 2) report the smallest pay gap at 12.5%.

The second model controls for cultural capital i.e., the index of respondents' cultural engagement. We control for cultural capital first as we aim to see how cultural capital affects the 'raw' social origin pay gap and to what extent there remains a pay gap before we consider respondents' education. Initially we observe that the coefficient of the cultural capital variable is significant and positive. After controlling for cultural capital, the most disadvantaged group remains those from NS-SEC 7 origins, facing a pay gap of on average 32.3%, followed by those with undefined social origins at 31.8%. Thus, once we control for cultural capital it reduces the pay gap by around four to five per cent for the most disadvantaged groups.

Next, we control for educational attainment. The largest pay gap observed is for respondents with undefined social origins. Controlling for educational attainment approximately halves the pay gap for all social origin groups, reducing the pay gap for those with undefined social origins to 16.6% and to 14.6% for those from NS-SEC 7 origins. After controlling for educational attainment, cultural capital is still positively associated with wages but is no longer significant. Although once we control for educational attainment cultural capital is no longer is significant, the effects of cultural capital on wages are difficult to disentangle due to their high correlation with educational attainment. It is perhaps most likely that cultural capital does not necessarily affect pay directly but is more so indirectly being captured through an individual's education. Thus, it is possible that educational attainment is capturing some of the benefits of cultural capital on wages. It would be a far reach to argue that attending the opera will increase an individual's pay. Nonetheless, engaging in such 'highbrow' cultural activities is an indicator of high social status, which can influence our networks, help build rapport with senior management and clients, and increase our exposure

to other high-status individuals, all of which can benefit individual's labour market prospects. However, the specific causal effects of which are difficult to disentangle as those who are more highly educated are generally more likely to participate in 'highbrow' cultural activities.

Subsequent models control for a range of labour market characteristics, such as work sector, whether the respondent works in a permanent job, firm size, managerial duties, and occupational status. The pay gap is almost completely unchanged once when we control for work sector for all social origin groups. Controlling for whether respondents' work in a permanent job slightly reduces the pay gap. We then control for firm size, which reduces the pay gap for all social origin groups highlighting that firm size plays a role in explaining the social origin pay gap. The firm size dummies demonstrate that working for a larger firm is positively associated with wages. We then control for managerial duties, which is significantly positively associated with wages. This reduces the pay gap for all social origin groups. The pay gap is still largest for those with undefined social origins, reduced from 15.1% to 11.5%. Cultural capital remains positive but is not significant after controlling for all the labour market observables discussed above. However, the effects of cultural capital on wages may be difficult to disentangle with certain labour market observables. Thus, the effects of cultural capital may be separate from such labour market attributes that have more of a direct impact on wages.

Lastly, in Model 8 we control for occupational status, thereby revealing the unexplained social origin pay gap that remains even when cultural capital, educational attainment, labour market attributes, and occupational status are accounted for. This reduces the pay gap for all social origin groups, however a significant pay gap remains for respondents with undefined social origins, at 5.9%. This highlights that individuals from non-traditional/fragmented backgrounds are the most disadvantaged in terms of pay in the labour market. It also highlights that occupational status plays a considerable role in explaining the social origin pay gap as the pay gap is no longer significant for those from NS-SEC 2 to NS-SEC 7 origins.

Table 4.16 shows the results for the 'final' model for waves 2 to 9[17]. Overall, we observe significant pay gaps for those with undefined social origins and those from NS-SEC 4 to NS-SEC 7 origins in most waves. Those with undefined social origins report significant pay gaps in seven of the eight waves. These results highlight that cultural capital does not fully explain the social origin pay gap.

Interestingly, after controlling for occupational status, cultural capital is negatively associated with wages but is not significant. However, it is important to note that this is just one measurement of cultural capital i.e., cultural engagement as a proxy for objectified cultural capital. Other forms of cultural capital (respondents' and parents' institutional cultural capital i.e., educational qualifications) is shown to be significant. Furthermore, these variables only measure if respondents did or did not mention participating in the listed cultural activities. It does not measure the volume or frequency of respondents' engagement and why they participated. Thus, it would also be useful to know why respondents engaged in certain 'highbrow' activities, whether it be through personal choice or a work event. Thus, it is difficult to disentangle the effects of cultural capital on wages from a list of mentioned/not mentioned cultural activities. It is possible that we may also be encountering endogeneity. Therefore, we attempt to address this by examining the effects of cultural capital on the social origin pay gap longitudinally.

4.6.2.2 Longitudinal analysis

Next, we discuss the results from the random effects models using the pooled sample, which are shown in Table 4.17. When we examine the social origin pay gap longitudinally, we observe significant pay gaps for all social origin groups, except those from NS-SEC 2 (lower professional and managerial) origins. This highlights that when we consider a pooled sample for eight waves of data, we still observe a significant social origin pay gap, even when we control for cultural capital, educational attainment, and a range of labour market observables.

Table 4.17 shows that the pay gap is the largest for those with undefined social origins at 8.9%, followed closely by those from NS-SEC 4 origins at 8.7% and those from NS-SEC 7 origins at 7.4%. Thus, when we examine the pay gap longitudinally, it remains largest for

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[17] The results are shown from wave 2 onwards as the cultural activities questions are firstly asked in wave 2.

those with undefined social origins and is second largest for those from NS-SEC 4 origins. This might indicate individuals whose parents were economically inactive and those whose parent(s) were self-employed may lack in possessing forms of cultural capital.

In Table 4.15, we examine the pay gap cross-sectionally using data from wave 9. In Table 4.17, we examine the pay gap longitudinally using data from waves two to nine. Overall, we observe some considerably different results. For instance, in Table 4.15 we observe the pay gap is only significant for those with undefined social origins, whereas in Table 4.17 we observe the pay gap is significant for seven of the eight social origin groups. Furthermore, when adopting a cross-sectional approach, in wave 9 we observe the pay gap is 5.9% for those with undefined social origins, compared to when we adopt a longitudinal approach the pay gap for those with undefined social origins is 8.9%. These results highlight that the pay gap may be larger over time and thus highlight the importance of adopting a longitudinal approach to examine such pay gaps.

Table 4.15: Cultural capital: Cross-sectional wage equations for wave 9 (2017-2019)
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.125***	-0.117***	-0.070**	-0.070**	-0.065**	-0.061*	-0.055*	-0.031
NS-SEC 3 origins	-0.178***	-0.151***	-0.076**	-0.075**	-0.074**	-0.073**	-0.051*	-0.022
NS-SEC 4 origins	-0.313***	-0.280***	-0.143***	-0.143***	-0.138***	-0.119***	-0.085**	-0.042
NS-SEC 5 origins	-0.269***	-0.225***	-0.087**	-0.088**	-0.085**	-0.082**	-0.053	-0.016
NS-SEC 6 origins	-0.316***	-0.266***	-0.114***	-0.114***	-0.111***	-0.110***	-0.079**	-0.026
NS-SEC 7 origins	-0.372***	-0.323***	-0.146***	-0.146***	-0.138***	-0.135***	-0.101***	-0.033
Undefined origins	-0.359***	-0.318***	-0.166***	-0.166***	-0.165***	-0.151***	-0.115***	-0.059**
Female	-0.506***	-0.523***	-0.510***	-0.506***	-0.503***	-0.471***	-0.435***	-0.412***
Age	0.089***	0.088***	0.076***	0.076***	0.074***	0.071***	0.052***	0.045***
Health	-0.141***	-0.142***	-0.119***	-0.119***	-0.116***	-0.104***	-0.078***	-0.060***
Urban	0.010	0.005	-0.010	-0.011	-0.011	0.017	0.001	0.007
Ethnicity	-0.050	-0.034	-0.113***	-0.113***	-0.109***	-0.111***	-0.087***	-0.065***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.782***	0.060	0.068	0.100	0.113	0.062	-0.038
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.341***	6.226***	6.651***	6.628***	6.376***	6.590***	6.830***	7.234***
Observations	7,567	7,567	7,567	7,567	7,567	7,567	7,567	7,567
R-squared	0.209	0.223	0.310	0.310	0.318	0.362	0.424	0.481

*** p<0.01, ** p<0.05, * p<0.1

Table 4.16: Cultural capital: Cross-sectional wage equations for waves 2 to 9 (2010-2019)
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9
NS-SEC 2 origins	-0.003	-0.041**	-0.026	-0.022	-0.029	-0.032	-0.053**	-0.031
NS-SEC 3 origins	-0.014	-0.032	-0.036	-0.038	-0.047**	-0.045*	-0.070***	-0.022
NS-SEC 4 origins	-0.037	-0.079***	-0.045*	-0.055*	-0.038	-0.073***	-0.092***	-0.042
NS-SEC 5 origins	-0.032	-0.057**	-0.047*	-0.056*	-0.062**	-0.067**	-0.070**	-0.016
NS-SEC 6 origins	-0.052**	-0.072***	-0.058**	-0.065**	-0.050**	-0.039	-0.069**	-0.026
NS-SEC 7 origins	-0.017	-0.044*	-0.035	-0.067**	-0.042	-0.040	-0.070**	-0.033
Undefined origins	-0.028	-0.074***	-0.066***	-0.088***	-0.081***	-0.086***	-0.117***	-0.059**
Female	-0.443***	-0.435***	-0.438***	-0.419***	-0.448***	-0.406***	-0.393***	-0.412***
Age	0.055***	0.058***	0.054***	0.058***	0.049***	0.051***	0.055***	0.045***
Health	-0.049***	-0.048***	-0.062***	-0.068***	-0.057***	-0.065***	-0.045***	-0.060***
Urban	-0.009	0.006	-0.010	0.021	0.014	-0.001	0.007	0.007
Ethnicity	-0.153***	-0.126***	-0.122***	-0.116***	-0.077***	-0.067***	-0.056**	-0.065***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement	-0.204***	-0.195***	-0.185***	-0.283***	-0.082	-0.106*	-0.209***	-0.038
Education	✓	✓	✓	✓	✓	✓	✓	✓
Work sector	✓	✓	✓	✓	✓	✓	✓	✓
Permanent Job	✓	✓	✓	✓	✓	✓	✓	✓
Firm size	✓	✓	✓	✓	✓	✓	✓	✓
Managerial duties	✓	✓	✓	✓	✓	✓	✓	✓
Occupational status	✓	✓	✓	✓	✓	✓	✓	✓
Constant	7.034***	6.938***	7.062***	6.906***	7.151***	7.066***	7.079***	7.234***
Observations	10,257	9,763	9,506	9,425	8,519	8,323	7,778	7,567
R-squared	0.494	0.493	0.519	0.472	0.520	0.499	0.488	0.481

*** p<0.01, ** p<0.05, * p<0.1

Table 4.17: Cultural capital: Longitudinal wage equations for waves 2 to 9 (2010-2019)
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.095***	-0.086***	-0.044**	-0.045**	-0.047***	-0.043**	-0.039**	-0.023
NS-SEC 3 origins	-0.158***	-0.135***	-0.060***	-0.061***	-0.062***	-0.061***	-0.053***	-0.036**
NS-SEC 4 origins	-0.321***	-0.284***	-0.154***	-0.153***	-0.153***	-0.140***	-0.123***	-0.087***
NS-SEC 5 origins	-0.289***	-0.249***	-0.119***	-0.119***	-0.118***	-0.116***	-0.099***	-0.062***
NS-SEC 6 origins	-0.313***	-0.266***	-0.119***	-0.120***	-0.121***	-0.119***	-0.105***	-0.064***
NS-SEC 7 origins	-0.367***	-0.316***	-0.149***	-0.150***	-0.151***	-0.145***	-0.127***	-0.074***
Undefined origins	-0.337***	-0.296***	-0.151***	-0.152***	-0.152***	-0.145***	-0.129***	-0.089***
Female	-0.522***	-0.540***	-0.524***	-0.532***	-0.531***	-0.514***	-0.493***	-0.487***
Age	0.093***	0.093***	0.089***	0.089***	0.086***	0.083***	0.075***	0.067***
Health	-0.017***	-0.018***	-0.017***	-0.017***	-0.017***	-0.017***	-0.018***	-0.018***
Urban	-0.022***	-0.023***	-0.024***	-0.024***	-0.023***	-0.011	-0.012*	-0.011
Non-white ethnicity	-0.180***	-0.155***	-0.220***	-0.220***	-0.214***	-0.212***	-0.192***	-0.171***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Year of study	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.746***	0.056	0.036	0.056	0.051	0.009	-0.127***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.292***	6.156***	6.407***	6.458***	6.349***	6.504***	6.593***	6.887***
Observations	88,496	88,496	88,496	88,496	88,496	88,496	88,496	88,496
R-squared	0.199	0.21	0.308	0.308	0.316	0.355	0.408	0.47

*** p<0.01, ** p<0.05, * p<0.1

4.6.3 Social capital

4.6.3.1 Cross-sectional analysis

To measure the effects of respondents' friends' employment status we create a dummy variable with those whose first best friend is employed is equal to one and all other categories are equal to zero. We do the same for respondents' second and third best friends. To measure the 'overall' employment status of respondents' friends we then create a variable that combines the values of three dummy variables (employment status of respondents' first, second, and third best friend) and divide by three. Thus, respondents who have higher values for this variable, their three best friends are more likely to be in employment. We also include in the model variables that measure the proportion of respondents' friends who have similar levels of education, similar employment status, and similar levels of income.

Table 4.18 reveals estimates for the 'social capital' model. Wave 9 is used here as an example, but the results from waves three to eight are shown in Appendix Tables 23 to 28. Respondents from higher managerial and professional origins (NS-SEC 1) are omitted as the reference category in all waves. Similar to the cultural capital model, we present the demographics model firstly which captures the 'raw' social origin pay gap. We observe the biggest pay gap for those from NS-SEC 7 origins at 37.2%, followed by those with undefined social origins at 35.9%. Those from lower managerial and professional origins (NS-SEC 2) report the smallest pay gap at 12.5%.

The second model controls for social capital. We proxy for social capital by including variables on the employment status of respondents' three best friends, and the proportion of respondents' friends with similar education, employment, and income. We control for social capital first as we aim to see how individuals' social networks impacts the 'raw' social origin pay gap and to what extent there remains a pay gap before we consider respondents' educational attainment. After doing so, the pay gap remains significant for all social origin groups. We observe that respondents' whose three best friends are more likely to be employed and those who have a higher proportion of friends who are employed is positively associated with wages. This is important to note for the social origin pay gap, as previously shown in Table 4.7 and Table 4.13, respondents from NS-SEC 1 origins are more likely to report that their three best friends and their broader social networks are in employment. Respondents with a higher proportion of friends who have similar income is negatively

associated with wages; we observe mixed results for respondents whose friends have similar levels of education by social origin.

After controlling for social capital in wave 9, the most disadvantaged group is those from NS-SEC 7 origins, facing a pay gap of on average 36.5%, followed by those with undefined social origins at 33.7%. Thus, once we control for social capital it only reduces the pay gap by around one to two per cent for the most disadvantaged groups; thus not as much when we control for cultural capital. Controlling for social capital increases the r-squared of the model from 20.9% to 23.3%; a greater increase in the r-squared compared to when we controlled for respondents' cultural engagement. Therefore, when comparing how cultural capital and social capital initially explain the pay gap we observe mixed results; we observe a larger reduction in the pay gap after controlling for cultural capital but a slightly larger increase in the r-squared of the model when we control for social capital.

Next, we control for educational attainment. This reduces the pay gap by over a half for all social origin groups, except for those from NS-SEC 2 origins. The pay gap is the largest for those with undefined social origins at 15.5%, followed by those from NS-SEC 7 origins at 14.8%. After controlling for educational attainment, respondents whose three best friends are more likely to be employed and respondents' friends who have similar employment status remains positive and significant. Although these two variables are similar, the difference is the first variable considers the employment status of respondents' three best friends and the second variables considers the employment status of all of respondents' friends.

Similar to the cultural capital analysis, subsequent models control for a range of labour market characteristics, such as work sector, whether the respondent works in a permanent job, firm size, managerial duties, and occupational status. After doing so, the pay gap remains significant for all social origin groups. Lastly, in Model 8 we control for occupational status. After doing so, the pay gap remains significant for those with undefined social origins (at the 10% level) but is no longer significant for all other social origin groups. Respondents' whose best friends are more likely to be employed, and respondents' whose friends have similar levels of education and employment are all positive and significant, indicating a networking effect. Respondents with friends who have similar levels of income is negatively associated with wages. With the employment status of respondents' three best friends having a greater impact on wages than the proportion of respondents' friends in

employment, this may indicate the employment status of respondents' best friends is more important than the employment status of their broader social networks. The 'final' social capital model has an r-squared of 49% compared to the 'final' cultural capital model of 48.1%, indicating that the social capital model explains more of the variance in respondents' wages.

Table 4.19 shows the results from the OLS regressions for waves 3 to 9[18]. We observe significant pay gaps in all waves for those with undefined social origins and a significant pay gap in most waves for those from NS-SEC 4 to NS-SEC 7 origins. In all waves, the employment status of respondents' friends and their best friends is significant and positively associated with wages. Respondents' whose friends have similar levels of education is significant and positively associated with wages in four of the eight waves, and respondents' whose friends have similar levels of income is negatively associated with wages and is significant in four of the eight waves.

The effects of social capital appear stronger than the effects of cultural capital, however, the social capital model measures respondents' best friends' employment status, and the proportion of friends who have similar levels of education, employment, and income, whereas the cultural capital model measures respondents' engagement in 20 'highbrow' cultural activities. Thus, the social capital model offers an insightful measurement of respondents' social networks whereas the cultural capital model is only measuring respondents' cultural engagement, the effects of which on wages are arguably more difficult to disentangle when dealing with cross-sectional data. Thus, we also examine the impact of social capital longitudinally.

4.6.3.2 Longitudinal analysis

Table 4.20 presents the results when controlling for social capital longitudinally. After controlling for respondents' social capital, educational attainment, and a range of labour market observables, we observe that the pay gap is significant at the 1% level for respondents from NS-SEC 4 to NS-SEC 7 and undefined origins and is significant at the 5% level for respondents from NS-SEC 3 origins. The pay gap is only not significant for those from NS-

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[18] The results are shown from wave 3 onwards as the social capital questions are firstly asked in wave 3.

SEC 2 origins. This highlights that when we take a longitudinal approach and examine the pay gap over seven waves of data, we still observe a significant pay gap for most social origin groups. This may indicate that there is still a pay gap present due to respondents' 'lack of' social capital i.e. they have a low proportion of friends in employment and their networks are also likely to hold similarly low levels of education. For instance, there remains a pay gap of 8.3% for those from NS-SEC 4 origins and a pay gap of 7.9% for those with undefined social origins. Thus, the results indicates that part of the wage disadvantage experienced by individuals from NS-SEC 4 to NS-SEC 7 origins and undefined social origins is likely to represent the impact of unequal access to social capital.

This could prove detrimental in the labour market as those from undefined and working-class origins are less likely to have networks they can draw upon for advice and support during periods of job searching, in terms of gaining access to valuable information, creating CV's, writing applications, preparing for interviews, and negotiating pay rises and promotions. In the case of university graduates, the gateway to a graduate job nowadays is via an internship, with research showing that over 40% are unpaid and many unadvertised (Sutton Trust, 2018). Polling data by the Social Mobility Commission (2017) found that 80% of respondents agreed companies should openly advertise internships and work experience opportunities, rather than organising these informally, with 42% strongly supporting a ban of unpaid internships. For individuals to secure an internship, many will need the financial support of their parents and an ability to utilise their networks, thus they require both economic and social capital. Overall, the results indicate that individuals from undefined and working-class origins have less beneficial social networks that they can utilise in the labour market.

Table 4.18: Social capital: Cross-sectional wage equations for wave 9 (2017-2019)
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.125***	-0.126***	-0.071**	-0.070**	-0.066**	-0.063**	-0.056*	-0.031
NS-SEC 3 origins	-0.178***	-0.178***	-0.079**	-0.078**	-0.078**	-0.077**	-0.054*	-0.023
NS-SEC 4 origins	-0.313***	-0.310***	-0.147***	-0.147***	-0.143***	-0.124***	-0.090**	-0.046
NS-SEC 5 origins	-0.269***	-0.267***	-0.097***	-0.098***	-0.095***	-0.092***	-0.061*	-0.021
NS-SEC 6 origins	-0.316***	-0.306***	-0.116***	-0.116***	-0.114***	-0.114***	-0.082**	-0.026
NS-SEC 7 origins	-0.372***	-0.365***	-0.148***	-0.148***	-0.141***	-0.139***	-0.105***	-0.034
Undefined origins	-0.359***	-0.337***	-0.155***	-0.155***	-0.155***	-0.144***	-0.109***	-0.052*
Female	-0.506***	-0.429***	-0.441***	-0.438***	-0.437***	-0.413***	-0.387***	-0.370***
Age	0.089***	0.078***	0.066***	0.067***	0.065***	0.063***	0.046***	0.039***
Health	-0.141***	-0.134***	-0.108***	-0.108***	-0.106***	-0.096***	-0.071***	-0.055***
Urban	0.010	0.009	-0.010	-0.010	-0.010	0.016	0.001	0.006
Ethnicity	-0.050	-0.048	-0.105***	-0.105***	-0.103***	-0.107***	-0.082***	-0.058**
Region	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.126***	0.108***	0.108***	0.106***	0.095***	0.080***	0.075***
Prop Friends Similar Income		-0.098***	-0.070***	-0.070***	-0.070***	-0.068***	-0.056**	-0.062***
Prop Friends Similar Education		-0.036*	0.025	0.024	0.022	0.026	0.027*	0.036**
Prop Friends Employed		0.059***	0.070***	0.070***	0.064***	0.053***	0.047***	0.038**
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.341***	6.285***	6.584***	6.567***	6.341***	6.556***	6.785***	7.169***
Observations	7,567	7,567	7,567	7,567	7,567	7,567	7,567	7,567
R-squared	0.209	0.233	0.328	0.328	0.336	0.376	0.434	0.490

*** p<0.01, ** p<0.05, * p<0.1

Table 4.19: Social capital: Cross-sectional wage equations for waves 3 to 9 (2011-2019)
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9
NS-SEC 2 origins	-0.036*	-0.022	-0.015	-0.031	-0.033	-0.053**	-0.031
NS-SEC 3 origins	-0.036	-0.037	-0.030	-0.045**	-0.043*	-0.068***	-0.023
NS-SEC 4 origins	-0.078***	-0.039	-0.055*	-0.041	-0.077***	-0.094***	-0.046
NS-SEC 5 origins	-0.056**	-0.048*	-0.052*	-0.064**	-0.074***	-0.076***	-0.021
NS-SEC 6 origins	-0.068***	-0.051**	-0.052*	-0.048**	-0.039	-0.065**	-0.026
NS-SEC 7 origins	-0.045*	-0.029	-0.061**	-0.045*	-0.041	-0.068**	-0.034
Undefined origins	-0.069***	-0.066***	-0.091***	-0.073***	-0.079***	-0.108***	-0.052*
Female	-0.387***	-0.387***	-0.368***	-0.400***	-0.355***	-0.349***	-0.370***
Age	0.050***	0.048***	0.050***	0.043***	0.045***	0.049***	0.039***
Health	-0.048***	-0.059***	-0.062***	-0.052***	-0.060***	-0.044***	-0.055***
Urban	0.000	-0.014	0.023	0.017	0.001	0.008	0.006
Ethnicity	-0.118***	-0.111***	-0.099***	-0.075***	-0.061***	-0.048**	-0.058**
Best Friends Employed	0.089***	0.082***	0.087***	0.085***	0.097***	0.084***	0.075***
Prop Friends Similar Income	-0.023	-0.035**	-0.056**	-0.024	-0.023	-0.043**	-0.062***
Prop Friends Similar Education	0.015	0.009	0.027*	0.009	0.031**	0.031**	0.036**
Prop Friends Employed	0.026*	0.043***	0.047***	0.050***	0.041***	0.036**	0.038**
Education	✓	✓	✓	✓	✓	✓	✓
Work sector	✓	✓	✓	✓	✓	✓	✓
Permanent Job	✓	✓	✓	✓	✓	✓	✓
Firm size	✓	✓	✓	✓	✓	✓	✓
Managerial duties	✓	✓	✓	✓	✓	✓	✓
Occupational status	✓	✓	✓	✓	✓	✓	✓
Constant	6.846***	6.957***	6.751***	7.034***	6.935***	6.954***	7.169***
Observations	9,037	8,769	8,691	8,519	8,323	7,778	7,567
R-squared	0.502	0.526	0.476	0.530	0.511	0.498	0.490

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.20: Social capital: Longitudinal wage equations for waves 3 to 9 (2011-2019)
Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.093***	-0.089***	-0.038**	-0.039**	-0.040**	-0.036**	-0.031*	-0.015
NS-SEC 3 origins	-0.152***	-0.147***	-0.055***	-0.057***	-0.058***	-0.057***	-0.048***	-0.031*
NS-SEC 4 origins	-0.312***	-0.303***	-0.152***	-0.152***	-0.152***	-0.140***	-0.120***	-0.083***
NS-SEC 5 origins	-0.285***	-0.277***	-0.116***	-0.116***	-0.115***	-0.114***	-0.097***	-0.056***
NS-SEC 6 origins	-0.315***	-0.300***	-0.118***	-0.118***	-0.120***	-0.118***	-0.102***	-0.055***
NS-SEC 7 origins	-0.358***	-0.346***	-0.143***	-0.144***	-0.146***	-0.141***	-0.121***	-0.063***
Undefined origins	-0.335***	-0.313***	-0.142***	-0.142***	-0.144***	-0.137***	-0.120***	-0.079***
Female	-0.526***	-0.451***	-0.456***	-0.464***	-0.463***	-0.450***	-0.434***	-0.434***
Age	0.093***	0.092***	0.088***	0.088***	0.085***	0.081***	0.073***	0.065***
Health	-0.016***	-0.016***	-0.015***	-0.015***	-0.015***	-0.016***	-0.017***	-0.017***
Urban	-0.024***	-0.022***	-0.024***	-0.023***	-0.023***	-0.011	-0.013*	-0.012*
Ethnicity	-0.148***	-0.159***	-0.197***	-0.197***	-0.193***	-0.193***	-0.172***	-0.150***
Year of study	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.122***	0.112***	0.112***	0.111***	0.105***	0.098***	0.093***
Proportion Friends Similar Income		-0.041**	-0.015	-0.014	-0.016	-0.017	-0.017	-0.012
Proportion Friends Similar Education		-0.060***	0.001	0.002	0.001	0.003	0.006	0.010
Proportion Friends Employed		0.080***	0.085***	0.085***	0.082***	0.076***	0.071***	0.066***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.279***	5.981***	6.115***	6.158***	6.062***	6.240***	6.345***	6.633***
Observations	81,356	81,356	81,356	81,356	81,356	81,356	81,356	81,356
R-squared	0.199	0.218	0.323	0.323	0.331	0.368	0.418	0.478

*** p<0.01, ** p<0.05, * p<0.1

4.7 Limitations & Recommendations for future research

Whilst this chapter does make a valuable contribution to the literature, it is not without its limitations. Trying to measure to what extent cultural capital and social capital impacts wages and disentangle these causal effects from other important factors that explain wages, such as educational attainment, is an onerous task. As previously outlined, the effects of cultural capital on wages are difficult to disentangle due to their high correlation with educational attainment. Thus, it is possible that educational attainment is capturing some of the benefits of cultural capital on wages. However, the specific causal effects of which are difficult to disentangle as those who are more highly educated are generally more likely to participate in 'highbrow' cultural activities. Furthermore, those who work in managerial duties are also more likely to engage in such activities. We observe that managerial duties have a positive significant effect on wages and thus the effects of cultural capital on wages may be captured through their occupational status and/or their managerial position. Thus, due to the UKHLS' research design, we are limited in asserting to what extent cultural engagement explains the social origin pay gap. Therefore, a few recommendations for future research are outlined below.

Firstly, in terms of the cultural activities, the UKHLS only asks if respondents have engaged in the activity in the past 12 months and thus only provides a binary response i.e., mentioned or not mentioned. This does not tell us anything about an individual's volume or frequency of engagement with the cultural activity. For instance, it would be reasonable to hypothesis that an individual who reads daily would have a broader range of vocabulary compared to an individual who has read one book in the past 12 months. These differences can influence their interpersonal and social skills, which can impact their performance in the workplace. Also, some respondents may attend the opera monthly while others may have attended once in the last 12 months by chance, through a friend or through a work event and not necessarily by choice. Participating in such 'highbrow' cultural activities can influence a person's status, affect their embodied cultural capital, and expand their networks with people in more senior positions in the workplace. However, it is difficult to assert to what extent this occurs with a binary response. Thus, it would be more informative if respondents were asked whom they engaged in such cultural activities with and whether their engagement was for either business or leisure. Furthermore, it is important to acknowledge that many of the cultural activities in the UKHLS are quite arts focused and with significant cuts to arts funding in recent years (The Guardian, 2022) this may result in lower levels of cultural engagement for those on

lower incomes. Moreover, it is important to acknowledge that some cultural activities are contingent on income (e.g., attending the opera) which may reduce the likelihood of those in low paying occupations engaging in such activities. Although it is difficult to establish the direction of causality, i.e., does income cause 'highbrow' cultural consumption or vice versa, a recent study found that the patterns of cultural engagement by class over time were not explained by income or hours worked (Katz-Gerro, 2023). Also, some cultural activities arguably require a level of intellectual capacity to engage in them (e.g., written music, stories, plays or poetry, computer artworks etc.) which may reduce the likelihood of those with low levels of education engaging in these activities.

In addition, quantitative data is arguably limited in its capacity to capture certain forms of cultural capital (Friedman and Laurison, 2019). In this chapter cultural capital is measured via cultural engagement, which whilst is an informative proxy for individuals' cultural capital, more so 'objectified' cultural capital, this does not tell us anything about individuals 'embodied' cultural capital such as their accent, mannerisms, language, speech etc. Accent is arguably the most salient indicator of an individual's social class. A hierarchy of accent prestige has been entrenched in British society for centuries (Lindsey, 2019), with Received Pronunciation (also referred to as the 'Queen's English') the dominant accent in positions of authority and power across the media, politics, the civil service, the legal system, and the corporate sector (Levon et al., 2022). Within the UK, speaking with Received Pronunciation is regarded as the 'correct' or 'proper' way to speak. Received Pronunciation represents the voice of power, influence, authority, and knowledge. In the media and the news, those who provide us with political, social, and economic updates often speak with received pronunciation, which again reinforces this idea that speaking a certain way is associated with knowledge and intellect. The 'experts', the commentators, the analysts, largely speak in this manner, thus it is the middle-class voice that dominates the British sphere. This creates the impression that the people who speak with Received Pronunciation are credible, insightful, and informed. However, estimates nowadays reveal that only two per cent of the UK population speak in this manner (Barton, 2018; Crystal, 2022) as there are countless regional dialectics in Britain from Liverpool, to Newcastle, Birmingham, Manchester, and Glasgow. Recent research found that 29% of senior professionals from working class origins have been mocked for their accent in the workplace (Levon et al., 2022). Given the prevalence of the social origin pay gap in the UK labour market and the salience of certain class related features, future waves of the UKHLS and other large-scale social surveys should aim to

include questions regarding treatment/discrimination in relation to respondents' social class and therein questions on accents, mannerisms, and individuals' perception of their 'fit' within the workplace, particularly within professional and managerial occupations. In addition, qualitative research would also be an appropriate way to gather data on such capitals in more depth through interviews and focus groups and supplement the quantitative data we have on other forms of cultural capital.

With regards to social capital, the variables in the UKHLS are useful in helping us empirically test how individuals' networks impact their wages, but when thinking about networks from a class pay gap perspective, the inclusion of other variables would also inform future analysis. For instance, having data on the occupational status of respondents' best friends and their educational qualification – and not just the proportion of friends' education levels - would provide a more detailed insight into the social status of individuals' networks. While knowing the employment status of respondents' friends is nonetheless useful, having data on their occupational status would take future research on the social origin pay gap a step further. This would help labour market researchers examine to what extent individuals having friends who work in professional and managerial jobs and have degrees can benefit them in the labour market.

In addition, although not having data on university institution has already been acknowledged as a limitation in Chapter 3, we restate it here because not only does the university that an individual attends matter for their labour market outcomes (e.g., Walker and Zhu (2013) and Belfield and Britton (2018)), but a body of literature also shows that the university people attend has cultural capital and social capital implications. For instance, the most 'elite' universities such as Oxford and Cambridge are stepped in highbrow culture with many of the universities' customs, practices, and societies being of an upper-class nature e.g., croquet, polo, horse riding, choir, the arts etc., (Reay, 2013). Furthermore, the relations individuals form at higher-ranking universities (Table 4.8 shows those from professional and managerial origins are more likely to have met their best friends at university) provides them with more 'influential' networks which can benefit them in the labour market in terms of access to information, support with applications, and interviews. Also, graduates from Russell Group universities have more opportunities in the labour market as some firms filter their applications based on whether the candidate attended a Russell Group university (Milkround, 2020). Moreover, those who graduate from the more 'elite' universities within

the Russell Group are over-represented within the most powerful and influential positions within UK society (Wakeling and Savage, 2015). For instance, of the 57 Prime Ministers to date, 30 were educated at the University of Oxford (ox.ac.uk, 2023) and 14 at the University of Cambridge (Blanchflower.org, 2023). This highlights strong signs of class reproduction in the most powerful and influential positions in the UK and yet again demonstrates the overwhelming representation of those from upper-class origins within the highest echelons of British society.

4.8 Conclusion

In conclusion, this chapter examined the social origin pay gap in the UKHLS and used a range of proxies for cultural capital and social capital to examine how these impact class-based wage penalties. This chapter offers a valuable contribution to the social origin pay gap literature through synthesising both economic and sociological thinking on labour market outcomes on the factors that explain the unexplained social origin pay gap. Thus, this chapter is the first of its kind to empirically examine to what extent cultural capital and social capital explain class pay gap penalties. Therefore, this chapter aimed to address the following research question: To what extent does cultural capital and social capital explain the social origin pay gap?

The chapter considered respondents' engagement with 20 'highbrow' cultural activities and their social networks, such as their best friends' employment status, and the proportion of respondents' friends who have a job and similar levels of education and income. We observe significant differences in cultural engagement between those with defined and undefined social origins. We also observed respondents from professional and managerial origins reported the highest levels of engagement in all cultural activities with those from higher professional and managerial (NS-SEC 1) origins reporting the highest levels of engagement in 16 of the 20 cultural activities, and their engagement is particularly high in prominent 'highbrow' cultural activities such as ballet and attending the opera. On the other hand, those from working-class and undefined social origins report the lowest levels of engagement for all cultural activities. In terms of 'total' cultural engagement, this was highest for those from NS-SEC 1 origins and lowest for those from NS-SEC 7 origins.

With regards to respondents' social capital, we observed that those from NS-SEC 1 origins are most likely to have met their best friends at university or through and organisation or

activity, indicating their networks are highly educated and may also possess high forms of cultural capital. Conversely, those from working-class origins are most likely to have met their friends in the neighbourhood or at school, indicating the friendships they form during their adolescence are long standing. Respondents from upper-class origins are more likely and those with undefined social origins are less likely to have friends in employment. Those from working-class origins are most likely to have friends who have similar levels of education, which given the results observed in Chapter 3, is less likely to hold a degree and more likely to leave school with no qualifications.

After controlling for cultural capital, educational attainment, and a rage of labour market observables, we observe significant pay gaps for those with undefined social origins in seven of the eight waves. When we examined the pay gap longitudinally, we observed significant pay gaps for all social origin groups, except those from NS-SEC 2 origins. The pay gap is largest for those with undefined social origins at 8.9%, followed by those from NS-SEC 4 origins at 8.7%. This indicates that cultural capital does not fully explain the social origin pay gap and thus we considered other factors that may explain the wage differences amongst equally qualified individuals; therefore, we considered respondents' social networks.

We observe significant pay gaps for those with undefined social origins in all waves and in a significant pay gap in most waves for those from NS-SEC 4 to NS-SEC 7 origins after accounting for respondents' social capital, educational attainment, and labour market features. In all waves, the employment status of respondents' friends and their best friends is significant and positively associated with wages. Respondents' whose friends have similar levels of education is significant and positively associated with wages in four of the eight waves, and respondents' whose friends have similar levels of income is negatively associated with wages and is significant in four of the eight waves. When we examine the pay gap longitudinally, we observe that the pay gap is significant at the 1% level for those from NS-SEC 4 to NS-SEC 7 origins and those with undefined social origins and is significant at the 10% level for those from NS-SEC 3 origins. The pay gap is largest for respondents from NS-SEC 4 origins, at 8.3%, and is second largest for those with undefined social origins at 7.9%. This indicates that part of the wage disadvantage experienced by individuals from NS-SEC 4 to NS-SEC 7 origins and undefined social origins is likely to represent the impact of unequal access to social capital.

Overall, the results demonstrate that social capital plays a role in explaining the social origin pay gap. However, it is important to note that social capital is proxied through four variables, whereas cultural capital measures only one form of cultural capital i.e., objectified cultural capital, which is proxied through respondents' cultural engagement, thus social capital offers arguably more of a comprehensive proxy. Future research would benefit from including variables that also measure forms of 'embodied' cultural capital, such as accent, speech, language, mannerisms etc., and whether respondents have ever been mistreated or discriminated against due to such features to examine their impacts on pay.

Conclusion

In conclusion, this thesis has addressed the following research question: **To what extent does social origin explain labour market outcomes independently of level of education?** Secondly, what are the factors mediating the association of wages/employment and social origin? Thus, the main hypothesis this thesis has explored is that there are a broad range of attributes valued in the labour market, independent of educational qualifications, that are correlated with social origin, and that can at least partially, explain class wage penalties.

This thesis builds upon the existing empirical evidence on the social origin pay gap in the UK labour market through conducting secondary data analysis using two large-scale UK datasets; the Labour Force Survey (LFS) and the United Kingdom Household Longitudinal Study (UKHLS). Chapter 2 examined whether previous empirical studies have underestimated the social origin pay gap by omitting respondents with undefined social origins i.e., those who were not assigned a social origin in the LFS because their household composition was not clear, nobody was earning in the household, or the occupational identity of the main wage earner could not be identified. Data from the LFS was analysed to establish the prevalence of undefined social origins and to what extent the socio-economic characteristics of those with undefined social origins are different from those with defined social origins. The results show that 10.5% of the working age population have undefined social origins and that the labour market outcomes of these people are, on average, much worse than those with defined social origins. The findings indicate that omitting respondents with undefined social origins underestimates the size of the social origin pay gap and the number of people affected. This highlights that there is a further effect of parental association in the labour market and additional consequences of not belonging to a household; both of which profoundly affects the life outcomes of a substantial share of the working age population.

Chapter 3 used the UKHLS to further examine the social origin pay gap and item non-response for social origin in relation to the pay gap. When examining the pay gap cross-sectionally, we find that those from undefined and routine origins experience a significant pay gap compared to those from NS-SEC 1 origins. When we examine the pay gap longitudinally, we find the pay gap is largest for those with undefined social origins, at 11.7%, followed by those from NS-SEC 7 origins at 11.2%. When we use total parental occupation as a proxy for social origin, we observe that the pay gap is generally larger for

those from 'lower' social origins, particularly respondents whose parent(s) were economically inactive. This result supplements the findings from Chapter 2 in that individuals with undefined social origins report a larger pay gap compared to those with defined social origins. In addition, we observe similar results when we use parental education, total parental education, and highest parental occupation and highest parental education as proxies for social origin in that the pay gap is larger for respondents from 'lower' social origins. The results indicate the social origin pay gap may be larger when we consider both parents' occupation and/or education.

Lastly, Chapter 4 uses a range of proxies for cultural capital and social capital in the UKHLS to examine how these impact social origin wage gaps. We observe significant pay gaps for all social origin groups after controlling for cultural capital, educational attainment, and a range of labour market observables. The pay gap is largest for those with undefined social origins at 8.9%, followed by those from NS-SEC 4 origins at 8.7%. This indicates that cultural capital does not fully explain the social origin pay gap and thus we consider respondents' social networks. When we control for social capital, educational attainment, and respondents' labour market features, we observe that the pay gap is significant for those from undefined and NS-SEC 4 to NS-SEC 7 origins. The pay gap is largest for respondents from NS-SEC 4 origins, at 8.3%, and is second largest for those with undefined social origins at 7.9%. This indicates that part of the wage disadvantage experienced by individuals from undefined and NS-SEC 4 to NS-SEC 7 origins is likely to represent the impact of unequal access to social capital. Overall, the results indicate social capital plays a role in explaining the social origin pay gap.

Overall, the results of this thesis highlight a clear social origin pay gap in the UK labour market, prevalent in the UK's largest employment survey and the UK's largest household panel study. This thesis contributes to the social origin pay gap literature in three ways: it examines the pay gaps for all survey respondents in the LFS and the UKHLS, including those with undefined social origins and highlights that omitting respondents with undefined social origins underestimates the size of the social origin pay gap and the number of people affected. Secondly, this thesis considers respondents' parents' occupational status and education to provide a more comprehensive proxy for respondents' social origin in estimating class wage gaps. This is an important contribution as the results indicate two things; those whose parents were economically inactive or have no formal education may be

further disadvantaged, and those whose parents both held NS-SEC 1 jobs or have degrees may be further advantaged through their parents' resources complementing and amplifying each other, both of which highlight the intergenerational transmission effects of individuals' social origin. Lastly, this thesis uses a range of proxies for cultural capital and social capital to empirically examine to what extent these forms of capital play a role in explaining the social origin pay gap, the first study of its kind to do so.

Finally, the thesis outlines a number of avenues for future research to help improve our understanding of social origin pay gaps and the factors that explain them. We conclude by recommending that all large-scale social surveys should have information on *all* respondents' social origin and if respondents were not living with their parents during their adolescence or could not identify a household, that this information is clearly signposted in the data. Chapter 2 shows different sub-groups with undefined social origins report poorer life outcomes, thus highlighting the importance of obtaining information on exactly why an individual cannot provide parental occupational information. Furthermore, this thesis highlights that the social origin pay gap may be larger when we consider 'total' parental occupational status and/or education. Thus, future social surveys should aim to collect data on respondents both parents' occupational status and education to further test this. Lastly, Chapter 4 outlines a number of recommendations for obtaining richer data on key class features that play a role in the pay gap, such as cultural capital and social capital. The collection of data on 'embodied' cultural capital, such as individuals' speech, accent, mannerisms, linguistics etc., and whether they have been discriminated against or mistreated in the labour market due to such factors would be a welcomed addition to the social origin evidence base. In addition, data on the volume and frequency of individuals' cultural engagement and the reasons why individuals took part in such activities would allow researchers to further test the role of cultural capital in relation to the social origin pay gap.

Overall, the results highlight significant unexplained social origin pay gaps for those from undefined and routine origins after controlling for educational attainment and a range of labour market observables, including occupational status. This highlights that education alone is insufficient in equalizing opportunities in the labour market and indicates there are a broad range of factors, beyond education, which can impact the levels of pay among equally qualified individuals from different social class backgrounds. In conclusion, the

results of this thesis highlight stark socio-economic inequalities in the UK labour market that urgently need addressed.

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Appendix

Chapter 2 Appendix

Table 1: Variable description and descriptive features of pooled sample (2014-21)

Variable name	Variable description	N	Mean	Std. Dev.
loghourpay	Natural logatithm of hourly pay	79,234	2.54	0.592
SOC1	Binary variable = 1 if social origin is SOC 1	393,254	11%	--
SOC2	Binary variable = 1 if social origin is SOC 2	393,254	15%	--
SOC3	Binary variable = 1 if social origin is SOC 3	393,254	8%	--
SOC4	Binary variable = 1 if social origin is SOC 4	393,254	5%	--
SOC5	Binary variable = 1 if social origin is SOC 5	393,254	21%	--
SOC6	Binary variable = 1 if social origin is SOC 6	393,254	3%	--
SOC7	Binary variable = 1 if social origin is SOC 7	393,254	4%	--
SOC8	Binary variable = 1 if social origin is SOC 8	393,254	12%	--
SOC9	Binary variable = 1 if social origin is SOC 9	393,254	10%	--
RegUnidentifiedNoA~r	Binary variable = 1 if no answer to social origin question	393,254	1%	--
RegUnidentifiedHou~d	Binary variable = 1 if social origin undefined because parent household when respondent was age 14 could not be identified	393,254	2%	--
RegUnidentifiedEar~r	Binary variable = 1 if social origin undefined because no earner identified in parent household when respondent was age 14.	393,254	5%	--
RegUnidentifiedOcc~n	Binary variable = 1 if social origin undefined because occupation could not be identified for main earner in parent household when respondent was age 14.	393,254	0.0	--
AGE	Age in years	393,254	45.1	15.2
age2	Age in years squared	393,254	2,265	1,336
female	Binary variable = 1 if respondent is female	393,254	53%	--
vismin	Binary variable = 1 if respondent belongs to a visible minority.	393,254	10%	--
disability	Binary variable = 1 if respondent is classified as disabled according to the Equality Act	393,254	21%	--
qualmissing	Highest qualification attained: no response to question	393,254	0%	--
qualnoresponse	Highest qualification attained not identified	393,254	0%	--
qualaca3plus	Highest qualification attained: academic postgraduate	393,254	10%	--
qualaca3	Highest qualification attained: academic graduate	393,254	19%	--
qualvoc3	Highest qualification attained: vocational graduate	393,254	0%	--
qualaca3sub	Highest qualification attained: academic sub-degree	393,254	5%	--
qualvoc3sub	Highest qualification attained: vocational sub-degree	393,254	5%	--
qualaca2plus	Highest qualification attained: academic post-secondary	393,254	8%	--
qualvoc2plus	Highest qualification attained: vocational post-secondary	393,254	14%	--
qualaca2sub	Highest qualification attained: academic lower secondary	393,254	16%	--
qualvoc2sub	Highest qualification attained: vocational lower secondary	393,254	5%	--
qualother	Highest qualification attained: other	393,254	9%	--
qualnoqual	Highest qualification attained: none	393,254	9%	--
degclass1	Degree classification: 1st	393,254	3%	--
degclass21	Degree classification: 2.1	393,254	10%	--
birthdum1	Country of birth: not-identified	393,254	0%	--
birthdum2	Country of birth: no answer	393,254	0%	--
birthdumIndia	Country of birth: India	393,254	1%	--
birthdumROI	Country of birth: Republic of Ireland	393,254	0%	--
birthdumPakistan	Country of birth: Pakistan	393,254	1%	--
birthdumPoland	Country of birth: Poland	393,254	1%	--
birthdumEngland	Country of birth: England	393,254	69%	--
birthdumNI	Country of birth: Northern Ireland	393,254	6%	--
birthdumScotland	Country of birth: Scotland	393,254	8%	--
birthdumWales	Country of birth: Wales	393,254	4%	--
birthdumUK	Country of birth: UK (nor further specified)	393,254	0%	--
birthdumOther	Country of birth: Other	393,254	11%	--
locDoesNotApply	Location of workplace: not identified	337,091	31%	--
locNoAnswer	Location of workplace: no answer	393,254	5%	--

locNorthEast	Location of workplace: North East England	393,254	86%	--
locNorthWest	Location of workplace: North West England	393,254	87%	--
locYorksAndHumber	Location of workplace: Yorkshire and Humber	393,254	6%	--
locEastMidlands	Location of workplace: East Midlands	393,254	5%	--
locWestMidlands	Location of workplace: West Midlands	393,254	6%	--
locEastofEngland	Location of workplace: East of England	393,254	6%	--
locLondon	Location of workplace: London	393,254	87%	--
locSouthEast	Location of workplace: South East of England	393,254	8%	--
locSouthWest	Location of workplace: South West of England	393,254	7%	--
locWales	Location of workplace: Wales	393,254	4%	--
locScotland	Location of workplace: Scotland	393,254	5%	--
locNorthernIreland	Location of workplace: Northern Ireland	393,254	4%	--
locWorkplaceoutsid~K	Location of workplace: Outside UK	393,254	1%	--
parttime	Respondent works part time (fewer than 35 hours a week)	393,254	55%	--
firmsizedum1	Firm size: not identified	393,254	40%	--
firmsizedum2	Firm size: no answer	393,254	1%	--
firmsizedum3	Firm size: 1-10 employees	393,254	12%	--
firmsizedum4	Firm size: 11-19 employees	393,254	5%	--
firmsizedum5	Firm size: 20-24 employees	393,254	3%	--
firmsizedum6	Firm size: Don't know but fewer than 25	393,254	1%	--
firmsizedum7	Firm size: 25-49 employees	393,254	8%	--
firmsizedum8	Firm size: 50-249 employees	393,254	14%	--
firmsizedum9	Firm size: 250-499 employees	393,254	4%	--
firmsizedum10	Firm size: Dont know but between 50 and 499	393,254	2%	--
firmsizedum11	Firm size: more than 500 employees	393,254	11%	--
sectorunknown	Sector of work: unidentified	393,254	32%	--
sectormissing	Sector of work: no answer	393,254	0%	--
sectorA	Sector of work: agriculture, forestry and fishing	393,254	1%	--
sectorBDE	Sector of work: energy and water	393,254	1%	--
sectorC	Sector of work: manufacturing	393,254	7%	--
sectorF	Sector of work: construction	393,254	5%	--
sectorGI	Sector of work: distribution, hotels and restaurants	393,254	12%	--
sectorHJ	Sector of work: transport and communications	393,254	6%	--
sectorKLMN	Sector of work: banking and finance	393,254	12%	--
sectorOPQ	Sector of work: public administration, education and health	393,254	22%	--
sectorRSTU	Sector of work: unidentified	393,254	4%	--
jobdum1	Occupational classification of work: not identified	393,254	0%	--
jobdum2	Occupational classification of work: higher managerial and professional	393,254	14%	--
jobdum3	Occupational classification of work: lower managerial and professional	393,254	23%	--
jobdum4	Occupational classification of work: intermediate	393,254	12%	--
jobdum5	Occupational classification of work: small employers and own account workers	393,254	8%	--
jobdum6	Occupational classification of work: lower supervisory and technical occupations	393,254	6%	--
jobdum7	Occupational classification of work: semi-routine occupations	393,254	11%	--
jobdum8	Occupational classification of work: routine occupations	393,254	8%	--
jobdum9	Occupational classification of work: never worked or long-term unemployed	393,254	19%	--

Table 2: Wage equations by year 2014-21 in the LFS - regression coefficients for unexplained social origin pay gaps

	2014	2015	2016	2017	2018	2019	2020	2021
SOC 2: Professionals	0.003	-0.015	-0.007	-0.01	-0.019	-0.005	-0.036*	-0.035*
SOC 3: Associate professional	-0.045**	-0.012	-0.009	-0.015	-0.019	-0.03	-0.006	-0.029
SOC 4: Administrative and secretarial	-0.006	0.008	-0.038	-0.021	-0.033	-0.070**	-0.048	-0.042*
SOC 5: Skilled trades	-0.034**	-0.039**	-0.049***	-0.030*	-0.043**	-0.054***	-0.057***	-0.085***
SOC 6: Caring and leisure	-0.049*	0.007	-0.045*	-0.023	-0.048	-0.048*	-0.070**	-0.060**
SOC 7: Sales and customer service	-0.047*	-0.035	-0.005	-0.067**	-0.046*	-0.027	-0.04	-0.072***
SOC 8: Process, plant and machine operatives	-0.049***	-0.062***	-0.048***	-0.056***	-0.072***	-0.059***	-0.059***	-0.087***
SOC 9: Elementary occupations	-0.058***	-0.043**	-0.078***	-0.044**	-0.070***	-0.075***	-0.063***	-0.083***
No answer	-0.096**	0	-0.138	-0.029	0.1	-0.049	-0.102	-0.09
Not living with family, etc.	-0.267***	-0.095*	-0.066*	-0.066*	-0.053	-0.182***	-0.096	-0.092
No earner identified in household	-0.075***	-0.073**	-0.042*	-0.061***	-0.039	-0.091***	-0.114***	-0.135***
Occupation not identified	-0.021	-0.084***	-0.092***	-0.061**	-0.084***	-0.116***	-0.053	-0.143***
Age	0.048***	0.054***	0.048***	0.052***	0.048***	0.046***	0.043***	0.050***
Female	-0.116***	-0.097***	-0.121***	-0.104***	-0.116***	-0.090***	-0.067***	-0.090***
Disability	-0.069***	-0.069***	-0.069***	-0.055***	-0.067***	-0.061***	-0.082***	-0.067***
Non-white ethnicity	-0.055***	-0.075***	-0.054***	-0.043***	-0.047***	-0.043**	-0.046**	-0.0170
Qualifications	✓	✓	✓	✓	✓	✓	✓	✓
Degree class 1st or 2.1	✓	✓	✓	✓	✓	✓	✓	✓
Country of birth	✓	✓	✓	✓	✓	✓	✓	✓
Region of workplace	✓	✓	✓	✓	✓	✓	✓	✓
Part-time	✓	✓	✓	✓	✓	✓	✓	✓
Firm size	✓	✓	✓	✓	✓	✓	✓	✓
Sector of employment	✓	✓	✓	✓	✓	✓	✓	✓
Occupational status	✓	✓	✓	✓	✓	✓	✓	✓
Constant	1.492***	1.294***	1.456***	1.416***	1.576***	1.550***	1.654***	1.644***
Observations	10741	10579	9975	10355	9491	9627	8759	9707
R-squared	0.499	0.484	0.486	0.435	0.439	0.438	0.406	0.421

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Chapter 3 Appendix

Table 3: Mother's highest level of education

Mother's highest education	Freq.	Per cent	Cum.
Degree	20,400	8.6	8.6
Post school qualifications	43,512	18.4	27.0
Left school with some school qualifications	77,226	32.63	59.6
Left school with no qualifications	85,638	36.2	95.8
Did not go to school at all	9,860	4.2	100
Total	236,636	100	

Table 4: Father's highest level of education

Father's highest education	Freq.	Per cent	Cum.
Degree	29,045	12.8	12.8
Post school qualifications	58,909	26.0	38.8
Left school with some school qualifications	55,251	24.3	63.1
Left school with no qualifications	77,998	34.3	97.4
Did not go to school at all	5,837	2.6	100
Total	227,040	100	

Table 5: Highest Parental Education over time

Higher of mother & father's education	Wave of data									Total
	1	2	3	4	5	6	7	8	9	
Degree	2,128	2,713	2,563	2,566	2,526	2,878	2,818	2,779	2,971	23,942
	14.7%	**14.4%**	**14.4%**	**14.8%**	**15.1%**	**16.3%**	**16.4%**	**16.5%**	**16.9%**	**15.5%**
Post school qualifications	4,237	5,597	5,354	5,210	5,069	5,172	5,081	5,034	5,220	45,974
	29.3%	**29.7%**	**30%**	**30%**	**30.3%**	**29.3%**	**29.6%**	**29.9%**	**29.7%**	**29.8%**
Left school with some school qualifications	3,802	4,867	4,667	4,581	4,425	4,722	4,647	4,553	4,822	41,086
	26.3%	**25.9%**	**26.2%**	**26.4%**	**26.4%**	**26.8%**	**27%**	**27%**	**27.5%**	**26.6%**
Left school with no qualifications	4,055	5,371	5,004	4,757	4,475	4,504	4,303	4,138	4,177	40,784
	28%	**28.5%**	**28%**	**27.4%**	**26.8%**	**25.5%**	**25%**	**24.6%**	**23.8%**	**26.4%**
Did not go to school at all	253	279	243	246	239	363	340	334	368	2,665
	1.7%	**1.5%**	**1.4%**	**1.4%**	**1.4%**	**2.1%**	**2%**	**2%**	**2.1%**	**1.7%**
Total	14,475	18,827	17,831	17,360	16,734	17,639	17,189	16,838	17,558	15,4451
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 6: Cross-sectional wage equations for wave 1 (2009-2011) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.094***	-0.041*	-0.042*	-0.040	-0.032	-0.026	-0.010
NS-SEC 3 origins	-0.170***	-0.058**	-0.059**	-0.059**	-0.059**	-0.040*	-0.025
NS-SEC 4 origins	-0.324***	-0.134***	-0.134***	-0.132***	-0.122***	-0.084***	-0.051**
NS-SEC 5 origins	-0.310***	-0.121***	-0.121***	-0.124***	-0.114***	-0.087***	-0.051**
NS-SEC 6 origins	-0.332***	-0.105***	-0.106***	-0.107***	-0.109***	-0.089***	-0.046**
NS-SEC 7 origins	-0.366***	-0.114***	-0.115***	-0.117***	-0.112***	-0.090***	-0.039
Undefined origins	-0.424***	-0.178***	-0.180***	-0.181***	-0.178***	-0.143***	-0.079**
Female	-0.539***	-0.540***	-0.546***	-0.545***	-0.519***	-0.480***	-0.466***
Age	0.101***	0.092***	0.091***	0.085***	0.081***	0.067***	0.059***
Health	-0.035**	-0.033**	-0.034**	-0.037**	-0.035**	-0.040***	-0.038***
Urban	0.001	-0.016	-0.015	-0.016	0.007	-0.001	-0.007
Ethnicity	-0.130***	-0.190***	-0.189***	-0.179***	-0.182***	-0.148***	-0.133***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.082***	6.376***	6.406***	6.210***	6.416***	6.519***	6.887***
Observations	9,217	9,217	9,217	9,217	9,217	9,217	9,217
R-squared	0.230	0.335	0.335	0.346	0.376	0.434	0.480

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Cross-sectional wage equations for wave 2 (2010-2012) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.084***	-0.025	-0.027	-0.026	-0.021	-0.017	-0.003
NS-SEC 3 origins	-0.154***	-0.036	-0.038	-0.037	-0.032	-0.025	-0.012
NS-SEC 4 origins	-0.297***	-0.101***	-0.102***	-0.101***	-0.086***	-0.064**	-0.034
NS-SEC 5 origins	-0.288***	-0.096***	-0.096***	-0.095***	-0.089***	-0.067**	-0.029
NS-SEC 6 origins	-0.340***	-0.107***	-0.108***	-0.111***	-0.108***	-0.092***	-0.047*
NS-SEC 7 origins	-0.351***	-0.092***	-0.094***	-0.093***	-0.086***	-0.066**	-0.012
Undefined origins	-0.313***	-0.095***	-0.097***	-0.097***	-0.086***	-0.064**	-0.024
Female	-0.520***	-0.522***	-0.529***	-0.526***	-0.500***	-0.457***	-0.446***
Age	0.102***	0.091***	0.091***	0.086***	0.082***	0.067***	0.056***
Health	-0.075***	-0.063***	-0.063***	-0.063***	-0.057***	-0.060***	-0.053***
Urban	-0.005	-0.024	-0.024	-0.025	0.001	-0.007	-0.009
Ethnicity	-0.161***	-0.216***	-0.215***	-0.208***	-0.213***	-0.167***	-0.144***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.023***	6.349***	6.378***	6.196***	6.410***	6.548***	6.960***
Observations	10,276	10,276	10,276	10,276	10,276	10,276	10,276
R-squared	0.215	0.330	0.330	0.337	0.374	0.440	0.494

*** p<0.01, ** p<0.05, * p<0.1

Table 8: Cross-sectional wage equations for wave 3 (2011-2013) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.126***	-0.072***	-0.073***	-0.074***	-0.066***	-0.063***	-0.042**
NS-SEC 3 origins	-0.178***	-0.067**	-0.069***	-0.072***	-0.068***	-0.059**	-0.032
NS-SEC 4 origins	-0.339***	-0.154***	-0.154***	-0.157***	-0.140***	-0.114***	-0.076***
NS-SEC 5 origins	-0.303***	-0.123***	-0.124***	-0.123***	-0.118***	-0.097***	-0.054**
NS-SEC 6 origins	-0.346***	-0.124***	-0.124***	-0.129***	-0.127***	-0.110***	-0.064***
NS-SEC 7 origins	-0.374***	-0.127***	-0.129***	-0.135***	-0.122***	-0.100***	-0.041
Undefined origins	-0.357***	-0.144***	-0.145***	-0.144***	-0.131***	-0.110***	-0.067***
Female	-0.509***	-0.515***	-0.523***	-0.522***	-0.491***	-0.451***	-0.438***
Age	0.105***	0.092***	0.092***	0.086***	0.082***	0.066***	0.059***
Health	-0.072***	-0.059***	-0.060***	-0.058***	-0.053***	-0.054***	-0.050***
Urban	0.018	0.000	0.001	0.002	0.024	0.008	0.005
Ethnicity	-0.134***	-0.196***	-0.195***	-0.186***	-0.186***	-0.143***	-0.121***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	5.953***	6.305***	6.342***	6.117***	6.349***	6.499***	6.870***
Observations	9,845	9,845	9,845	9,845	9,845	9,845	9,845
R-squared	0.211	0.320	0.320	0.330	0.371	0.440	0.493

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Cross-sectional wage equations for wave 4 (2012-2014) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.111***	-0.058**	-0.060**	-0.061**	-0.052**	-0.045**	-0.023
NS-SEC 3 origins	-0.176***	-0.064**	-0.067**	-0.072***	-0.064**	-0.052**	-0.031
NS-SEC 4 origins	-0.314***	-0.124***	-0.124***	-0.121***	-0.107***	-0.083***	-0.039
NS-SEC 5 origins	-0.313***	-0.129***	-0.130***	-0.128***	-0.119***	-0.102***	-0.048*
NS-SEC 6 origins	-0.329***	-0.116***	-0.117***	-0.118***	-0.115***	-0.101***	-0.052**
NS-SEC 7 origins	-0.363***	-0.117***	-0.119***	-0.121***	-0.110***	-0.096***	-0.030
Undefined origins	-0.348***	-0.145***	-0.146***	-0.149***	-0.133***	-0.107***	-0.055**
Female	-0.512***	-0.518***	-0.526***	-0.526***	-0.493***	-0.453***	-0.439***
Age	0.100***	0.087***	0.086***	0.083***	0.079***	0.063***	0.054***
Health	-0.072***	-0.070***	-0.071***	-0.068***	-0.061***	-0.064***	-0.063***
Urban	-0.005	-0.025	-0.024	-0.023	0.006	-0.008	-0.010
Ethnicity	-0.143***	-0.198***	-0.198***	-0.192***	-0.191***	-0.143***	-0.115***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.045***	6.389***	6.429***	6.219***	6.448***	6.618***	7.007***
Observations	9,617	9,617	9,617	9,617	9,617	9,617	9,617
R-squared	0.215	0.330	0.331	0.337	0.383	0.457	0.517

*** p<0.01, ** p<0.05, * p<0.1

Table 10: Cross-sectional wage equations for wave 5 (2013-2015) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.114***	-0.057**	-0.059**	-0.064**	-0.054**	-0.049**	-0.021
NS-SEC 3 origins	-0.184***	-0.073**	-0.074**	-0.074**	-0.065**	-0.059**	-0.030
NS-SEC 4 origins	-0.327***	-0.136***	-0.136***	-0.140***	-0.119***	-0.095***	-0.048
NS-SEC 5 origins	-0.313***	-0.130***	-0.131***	-0.133***	-0.122***	-0.105***	-0.052*
NS-SEC 6 origins	-0.346***	-0.131***	-0.131***	-0.134***	-0.129***	-0.114***	-0.056**
NS-SEC 7 origins	-0.403***	-0.160***	-0.161***	-0.165***	-0.152***	-0.131***	-0.058**
Undefined origins	-0.368***	-0.161***	-0.163***	-0.163***	-0.152***	-0.130***	-0.079***
Female	-0.496***	-0.503***	-0.511***	-0.508***	-0.473***	-0.440***	-0.424***
Age	0.107***	0.095***	0.094***	0.090***	0.082***	0.065***	0.058***
Health	-0.092***	-0.076***	-0.077***	-0.075***	-0.065***	-0.067***	-0.068***
Urban	0.030	0.007	0.008	0.008	0.039**	0.024	0.022
Ethnicity	-0.134***	-0.187***	-0.187***	-0.175***	-0.170***	-0.125***	-0.102***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	5.883***	6.215***	6.259***	5.995***	6.247***	6.456***	6.816***
Observations	9,509	9,509	9,509	9,509	9,509	9,509	9,509
R-squared	0.202	0.303	0.303	0.315	0.362	0.421	0.471

*** p<0.01, ** p<0.05, * p<0.1

Table 11: Cross-sectional wage equations for wave 6 (2014-2016) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.105***	-0.060**	-0.061**	-0.061**	-0.061**	-0.055**	-0.029
NS-SEC 3 origins	-0.164***	-0.069**	-0.070**	-0.074***	-0.082***	-0.076***	-0.046**
NS-SEC 4 origins	-0.302***	-0.140***	-0.140***	-0.139***	-0.116***	-0.077***	-0.037
NS-SEC 5 origins	-0.319***	-0.133***	-0.133***	-0.135***	-0.129***	-0.107***	-0.060**
NS-SEC 6 origins	-0.332***	-0.130***	-0.129***	-0.132***	-0.129***	-0.106***	-0.048*
NS-SEC 7 origins	-0.363***	-0.146***	-0.146***	-0.141***	-0.142***	-0.112***	-0.040
Undefined origins	-0.354***	-0.167***	-0.167***	-0.164***	-0.156***	-0.126***	-0.080***
Female	-0.518***	-0.526***	-0.532***	-0.528***	-0.493***	-0.458***	-0.449***
Age	0.093***	0.081***	0.081***	0.077***	0.073***	0.055***	0.049***
Health	-0.091***	-0.075***	-0.075***	-0.070***	-0.071***	-0.063***	-0.057***
Urban	0.007	-0.014	-0.014	-0.015	0.021	0.006	0.013
Ethnicity	-0.064**	-0.128***	-0.127***	-0.124***	-0.131***	-0.098***	-0.074***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.217***	6.541***	6.570***	6.344***	6.590***	6.817***	7.130***
Observations	8,519	8,519	8,519	8,519	8,519	8,519	8,519
R-squared	0.217	0.321	0.322	0.330	0.385	0.459	0.520

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 12: Cross-sectional wage equations for wave 7 (2015-2017) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.106***	-0.064**	-0.064**	-0.065**	-0.058**	-0.055**	-0.032
NS-SEC 3 origins	-0.175***	-0.085***	-0.085***	-0.087***	-0.081***	-0.070***	-0.043*
NS-SEC 4 origins	-0.346***	-0.186***	-0.186***	-0.184***	-0.157***	-0.117***	-0.071***
NS-SEC 5 origins	-0.311***	-0.142***	-0.142***	-0.145***	-0.133***	-0.112***	-0.064**
NS-SEC 6 origins	-0.319***	-0.126***	-0.126***	-0.125***	-0.118***	-0.095***	-0.036
NS-SEC 7 origins	-0.360***	-0.153***	-0.153***	-0.154***	-0.143***	-0.105***	-0.037
Undefined origins	-0.362***	-0.187***	-0.187***	-0.185***	-0.164***	-0.136***	-0.084***
Female	-0.492***	-0.498***	-0.497***	-0.495***	-0.461***	-0.426***	-0.408***
Age	0.092***	0.083***	0.083***	0.079***	0.075***	0.056***	0.051***
Health	-0.111***	-0.093***	-0.093***	-0.089***	-0.089***	-0.076***	-0.065***
Urban	-0.011	-0.025	-0.025	-0.028	0.013	-0.001	-0.002
Ethnicity	-0.057**	-0.116***	-0.116***	-0.118***	-0.127***	-0.088***	-0.064***
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.262***	6.511***	6.510***	6.258***	6.506***	6.746***	7.039***
Observations	8,323	8,323	8,323	8,323	8,323	8,323	8,323
R-squared	0.203	0.299	0.299	0.309	0.365	0.435	0.498

*** p<0.01, ** p<0.05, * p<0.1

Table 13: Cross-sectional wage equations for wave 8 (2016-2018) in the UKHLS. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NS-SEC 2 origins	-0.143***	-0.093***	-0.093***	-0.091***	-0.090***	-0.074***	-0.053**
NS-SEC 3 origins	-0.227***	-0.127***	-0.126***	-0.125***	-0.117***	-0.095***	-0.067***
NS-SEC 4 origins	-0.358***	-0.193***	-0.193***	-0.191***	-0.174***	-0.130***	-0.089***
NS-SEC 5 origins	-0.322***	-0.138***	-0.138***	-0.137***	-0.135***	-0.103***	-0.065**
NS-SEC 6 origins	-0.347***	-0.144***	-0.144***	-0.145***	-0.144***	-0.111***	-0.063**
NS-SEC 7 origins	-0.407***	-0.185***	-0.185***	-0.185***	-0.186***	-0.138***	-0.064**
Undefined origins	-0.406***	-0.223***	-0.222***	-0.223***	-0.210***	-0.170***	-0.113***
Female	-0.494***	-0.495***	-0.492***	-0.488***	-0.452***	-0.418***	-0.397***
Age	0.096***	0.085***	0.085***	0.082***	0.079***	0.060***	0.055***
Health	-0.092***	-0.082***	-0.082***	-0.077***	-0.077***	-0.062***	-0.046***
Urban	-0.002	-0.015	-0.015	-0.014	0.017	0.001	0.006
Ethnicity	-0.043	-0.099***	-0.099***	-0.097***	-0.112***	-0.082***	-0.049**
Region	✓	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓	✓
Work sector			✓	✓	✓	✓	✓
Permanent Job				✓	✓	✓	✓
Firm size					✓	✓	✓
Managerial duties						✓	✓
Occupational status							✓
Constant	6.224***	6.503***	6.489***	6.275***	6.462***	6.714***	7.028***
Observations	7,778	7,778	7,778	7,778	7,778	7,778	7,778
R-squared	0.215	0.314	0.314	0.322	0.369	0.430	0.487

*** p<0.01, ** p<0.05, * p<0.1

Chapter 4 Appendix

Table 14: Variables used in Chapter 4

Cultural capital	
w_mla1	Used a public library service
w_mla3	Visited a museum or gallery
w_arts1b15	Been a member of a book club
w_arts1a1	Dance, including ballet
w_arts1a2	Sang to an audience or rehearsed for a performance (not karaoke)
w_arts1a3	Played a musical instrument
w_arts1a4	Written music
w_arts1a5	Rehearsed or performed in a play/drama, opera/operetta or musical theatre
w_arts1b9	Painting, drawing, printmaking or sculpture
w_arts2a4	Event connected with books or writing
w_arts1b10	Photography, film or video making as an artistic activity (not family or holiday)
w_arts1b11	Used a computer to create original artworks or animation
w_arts1b12	Textile crafts, wood crafts or any other crafts, such as embroidery, knitting
w_arts1b13	Read for pleasure (not newspapers, magazines or comics)
w_arts1b14	Written any stories, plays or poetry
w_arts2b10	Opera/operetta
w_arts2b11	Attended a classical music performance
w_arts2b12	Rock, pop or jazz performance
w_arts2b13	Ballet
w_arts2b14	Contemporary dance
Social capital	
netjb_1	Best friend no 1: employment of friend
netjb_2	Best friend no 2: employment of friend
netjb_3	Best friend no 3: employment of friend
netkn_1	Best friend no 1: how long known friend
netkn_2	Best friend no 2: how long known friend
netkn_3	Best friend no 3: how long known friend
netmet_1	Best friend no 1: how first met
netmet_2	Best friend no 2: how first met
netmet_3	Best friend no 3: how first met
netet_1	Best friend no 1: ethnicity of friend
netet_2	Best friend no 2: ethnicity of friend
netet_3	Best friend no 3: ethnicity of friend
simage	proportion of friends with similar age
simeduc	Proportion of friends with similar level of education
siminc	Proportion of friends with similar income
simjob	Proportion of friends who have a job
simrace	Proportion of friends of same race

Table 15: Social origin and social capital
- Grey box indicates the highest percentage across all social origin groups
- Blue box indicates the smallest percentage across all social origin groups

Social capital	NS-SEC 1	NS-SEC 2	NS-SEC 3	NS-SEC 4	NS-SEC 5	NS-SEC 6	NS-SEC 7	Undefined
Best friend no 1: full-time employment	64.44	62.12	61.13	58.09	58.68	56.33	56.51	54.83
Best friend no 1: unemployed	3.74	4.87	4.10	5.80	6.18	6.96	8.63	9.44
Best friend no 2: full-time employment	63.55	62.58	61.54	59.12	59.11	58.35	57.79	54.72
Best friend no 2: unemployed	4.17	4.44	4.32	5.41	5.82	6.75	8.14	8.96
Best friend no 3: full-time employment	64.50	62.56	60.99	58.05	58.62	56.32	57.41	54.60
Best friend no 3: unemployed	3.59	4.69	3.94	5.79	6.37	7.28	8.28	9.31
Best friend no 1: how first met - in the neighbourhood	7.12	9.98	7.94	12.15	10.04	10.26	12.34	12.86
Best friend no 2: how first met - in the neighbourhood	5.25	8.79	7.35	7.36	7.77	10.22	7.69	9.91
Best friend no 3: how first met - in the neighbourhood	8.67	6.69	8.12	8.57	7.72	6.20	5.22	9.67
Best friend no 1: how first met - at school	20.31	20.05	22.66	22.23	19.51	20.40	21.48	28.22
Best friend no 2: how first met - at school	14.35	16.65	14.06	18.93	19.33	16.59	14.85	20.90
Best friend no 3: how first met - at school	16.05	17.91	12.83	18.41	16.07	16.30	15.16	21.99
Best friend no 1: how first met - college or university	15.86	11.72	10.07	8.54	6.53	7.65	9.10	9.68
Best friend no 2: how first met - college or university	16.13	14.59	9.94	8.40	8.12	8.02	8.54	11.49
Best friend no 3: how first met - college or university	8.82	13.19	8.40	8.12	6.69	6.88	5.44	10.49
Best friend no 1: how first met - at work	16.60	18.69	18.66	21.81	26.20	21.75	20.08	15.31
Best friend no 2: how first met - at work	22.20	20.17	24.29	21.47	20.56	23.71	25.95	19.67
Best friend no 3: how first met - at work	20.11	20.42	21.96	23.14	18.43	24.27	23.21	18.73
Best friend no 1: how first met - through an organisation	5.87	4.74	4.32	3.43	2.61	2.66	2.19	2.74
Best friend no 2: how first met - through an organisation	4.99	4.05	5.32	4.59	3.00	3.49	2.51	2.40
Best friend no 3: how first met - through an organisation	9.16	4.51	3.23	3.05	4.12	2.81	2.28	2.69

Best friend no 1: ethnicity - white	88.00	86.65	89.11	78.30	88.63	86.95	83.86	82.58
Best friend no 2: ethnicity - white	87.14	86.26	89.28	78.99	89.34	85.77	83.39	82.84
Best friend no 3: ethnicity - white	88.24	87.61	89.55	81.40	90.46	87.17	84.54	84.67
Proportion of friends with similar age - all similar	29.62	31.81	33.22	34.59	35.88	36.53	35.31	34.16
Proportion of friends with similar age - more than half	43.00	40.30	38.53	34.10	33.20	31.41	29.73	33.36
Proportion of friends with similar level of education - All similar	28.66	29.52	33.43	35.34	39.23	38.42	38.53	36.27
Proportion of friends with similar level of education - More than half	43.52	40.44	36.67	32.87	31.50	29.95	30.44	33.25
Proportion of friends with similar level of income - All similar	11.92	11.63	12.81	15.30	17.64	16.36	17.27	15.37
Proportion of friends with similar level of income - More than half	34.45	33.98	33.08	31.36	28.35	29.04	29.84	30.44
Proportion of friends who have a job - All of them	44.45	42.49	43.01	42.15	42.67	40.78	36.07	35.04
Proportion of friends who have a job - Less than half	8.38	9.02	10.71	12.20	14.48	13.84	15.11	15.18
Proportion of friends of same race - All the same	36.92	39.96	44.52	47.44	52.75	48.35	49.41	50.63
Proportion of friends of same race - More than half	47.89	44.06	41.44	34.00	32.72	33.25	30.94	32.30

Table 16: Cultural Capital: Cross-sectional wage equations for wave 2 (2010-2012) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.096***	-0.091***	-0.033	-0.035	-0.034	-0.028	-0.018	-0.006
NS-SEC 3 origins	-0.161***	-0.140***	-0.044	-0.046*	-0.045*	-0.039	-0.029	-0.017
NS-SEC 4 origins	-0.291***	-0.261***	-0.103***	-0.105***	-0.103***	-0.088***	-0.063**	-0.037
NS-SEC 5 origins	-0.294***	-0.260***	-0.102***	-0.103***	-0.100***	-0.095***	-0.073**	-0.038
NS-SEC 6 origins	-0.351***	-0.306***	-0.120***	-0.121***	-0.123***	-0.119***	-0.103***	-0.058**
NS-SEC 7 origins	-0.347***	-0.298***	-0.092***	-0.094***	-0.092***	-0.085***	-0.064**	-0.012
Undefined origins	-0.318***	-0.281***	-0.108***	-0.110***	-0.110***	-0.096***	-0.071***	-0.034
Female	-0.517***	-0.535***	-0.517***	-0.524***	-0.520***	-0.493***	-0.451***	-0.437***
Age	0.103***	0.102***	0.091***	0.091***	0.087***	0.083***	0.066***	0.056***
Health	-0.069***	-0.072***	-0.059***	-0.059***	-0.060***	-0.055***	-0.058***	-0.049***
Urban	-0.007	-0.010	-0.026	-0.025	-0.027	-0.000	-0.010	-0.009
Ethnicity	-0.126***	-0.102***	-0.191***	-0.191***	-0.185***	-0.192***	-0.145***	-0.130***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.731***	-0.093	-0.105	-0.077	-0.056	-0.098	-0.191***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.027***	5.913***	6.373***	6.408***	6.213***	6.422***	6.576***	7.010***
Observations	9,316	9,316	9,316	9,316	9,316	9,316	9,316	9,316
R-squared	0.216	0.227	0.329	0.329	0.336	0.376	0.443	0.498

*** p<0.01, ** p<0.05, * p<0.1

Table 17: Cultural Capital: Cross-sectional wage equations for wave 3 (2011-2013) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.128***	-0.124***	-0.071***	-0.073***	-0.075***	-0.064***	-0.059***	-0.038*
NS-SEC 3 origins	-0.185***	-0.165***	-0.077***	-0.080***	-0.082***	-0.076***	-0.064***	-0.039*
NS-SEC 4 origins	-0.337***	-0.308***	-0.160***	-0.160***	-0.163***	-0.142***	-0.114***	-0.078***
NS-SEC 5 origins	-0.305***	-0.273***	-0.128***	-0.129***	-0.126***	-0.120***	-0.100***	-0.058**
NS-SEC 6 origins	-0.360***	-0.315***	-0.137***	-0.138***	-0.142***	-0.138***	-0.122***	-0.075***
NS-SEC 7 origins	-0.380***	-0.335***	-0.137***	-0.140***	-0.144***	-0.128***	-0.107***	-0.049*
Undefined origins	-0.365***	-0.330***	-0.158***	-0.161***	-0.159***	-0.144***	-0.120***	-0.079***
Female	-0.505***	-0.523***	-0.511***	-0.519***	-0.519***	-0.489***	-0.448***	-0.432***
Age	0.103***	0.102***	0.090***	0.089***	0.084***	0.080***	0.063***	0.057***
Health	-0.072***	-0.075***	-0.059***	-0.060***	-0.059***	-0.055***	-0.057***	-0.051***
Urban	0.010	0.005	-0.006	-0.005	-0.004	0.019	0.001	-0.001
Ethnicity	-0.116***	-0.096***	-0.185***	-0.185***	-0.176***	-0.180***	-0.139***	-0.123***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.696***	-0.073	-0.092	-0.058	-0.037	-0.072	-0.160**
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.001***	5.897***	6.374***	6.423***	6.198***	6.429***	6.588***	6.982***
Observations	9,037	9,037	9,037	9,037	9,037	9,037	9,037	9,037
R-squared	0.210	0.220	0.317	0.317	0.327	0.368	0.439	0.494

*** p<0.01, ** p<0.05, * p<0.1

Table 18: Cultural Capital: Cross-sectional wage equations for wave 4 (2012-2014) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.116***	-0.111***	-0.061**	-0.064**	-0.065**	-0.054**	-0.047**	-0.025
NS-SEC 3 origins	-0.186***	-0.167***	-0.076***	-0.079***	-0.083***	-0.073***	-0.061**	-0.042*
NS-SEC 4 origins	-0.317***	-0.287***	-0.133***	-0.133***	-0.129***	-0.112***	-0.084***	-0.042
NS-SEC 5 origins	-0.313***	-0.280***	-0.131***	-0.132***	-0.128***	-0.120***	-0.106***	-0.053*
NS-SEC 6 origins	-0.341***	-0.299***	-0.124***	-0.126***	-0.126***	-0.120***	-0.108***	-0.058**
NS-SEC 7 origins	-0.366***	-0.322***	-0.129***	-0.132***	-0.132***	-0.118***	-0.101***	-0.035
Undefined origins	-0.366***	-0.332***	-0.168***	-0.170***	-0.171***	-0.151***	-0.125***	-0.077***
Female	-0.509***	-0.526***	-0.512***	-0.520***	-0.520***	-0.487***	-0.445***	-0.431***
Age	0.100***	0.098***	0.086***	0.086***	0.083***	0.079***	0.063***	0.054***
Health	-0.071***	-0.072***	-0.070***	-0.071***	-0.070***	-0.063***	-0.067***	-0.064***
Urban	-0.011	-0.015	-0.028	-0.027	-0.026	0.003	-0.015	-0.015
Ethnicity	-0.123***	-0.104***	-0.186***	-0.187***	-0.180***	-0.182***	-0.136***	-0.116***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.680***	-0.102	-0.120	-0.094	-0.073	-0.086	-0.177***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.065***	5.975***	6.432***	6.482***	6.276***	6.499***	6.667***	7.086***
Observations	8,769	8,769	8,769	8,769	8,769	8,769	8,769	8,769
R-squared	0.215	0.226	0.327	0.328	0.334	0.380	0.456	0.517

*** p<0.01, ** p<0.05, * p<0.1

Table 19: Cultural Capital: Cross-sectional wage equations for wave 5 (2013-2015) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.110***	-0.105***	-0.053*	-0.055*	-0.061**	-0.049*	-0.045*	-0.018
NS-SEC 3 origins	-0.186***	-0.165***	-0.076**	-0.078**	-0.078**	-0.068**	-0.064**	-0.037
NS-SEC 4 origins	-0.332***	-0.302***	-0.151***	-0.151***	-0.153***	-0.128***	-0.105***	-0.061**
NS-SEC 5 origins	-0.311***	-0.278***	-0.131***	-0.132***	-0.132***	-0.119***	-0.108***	-0.057*
NS-SEC 6 origins	-0.352***	-0.311***	-0.138***	-0.139***	-0.141***	-0.129***	-0.120***	-0.062**
NS-SEC 7 origins	-0.401***	-0.360***	-0.174***	-0.176***	-0.180***	-0.162***	-0.141***	-0.068**
Undefined origins	-0.382***	-0.350***	-0.184***	-0.187***	-0.189***	-0.173***	-0.151***	-0.103***
Female	-0.492***	-0.508***	-0.494***	-0.503***	-0.500***	-0.464***	-0.430***	-0.413***
Age	0.104***	0.104***	0.092***	0.092***	0.087***	0.080***	0.063***	0.056***
Health	-0.090***	-0.090***	-0.076***	-0.076***	-0.076***	-0.066***	-0.065***	-0.065***
Urban	0.026	0.022	0.006	0.008	0.007	0.039**	0.019	0.020
Ethnicity	-0.120***	-0.102***	-0.181***	-0.182***	-0.168***	-0.164***	-0.123***	-0.108***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.625***	-0.121	-0.140*	-0.105	-0.067	-0.134*	-0.247***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	5.935***	5.835***	6.284***	6.337***	6.069***	6.308***	6.532***	6.915***
Observations	8,691	8,691	8,691	8,691	8,691	8,691	8,691	8,691
R-squared	0.200	0.208	0.297	0.298	0.309	0.356	0.416	0.468

*** p<0.01, ** p<0.05, * p<0.1

Table 20: Cultural Capital: Cross-sectional wage equations for wave 6 (2014-2016) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.105***	-0.102***	-0.060**	-0.061**	-0.061**	-0.061**	-0.055**	-0.029
NS-SEC 3 origins	-0.164***	-0.142***	-0.069**	-0.070**	-0.073***	-0.081***	-0.076***	-0.047**
NS-SEC 4 origins	-0.302***	-0.272***	-0.140***	-0.139***	-0.138***	-0.115***	-0.076***	-0.038
NS-SEC 5 origins	-0.319***	-0.279***	-0.133***	-0.133***	-0.134***	-0.127***	-0.107***	-0.062**
NS-SEC 6 origins	-0.332***	-0.285***	-0.129***	-0.129***	-0.131***	-0.127***	-0.105***	-0.050**
NS-SEC 7 origins	-0.363***	-0.317***	-0.145***	-0.146***	-0.140***	-0.140***	-0.112***	-0.042
Undefined origins	-0.354***	-0.316***	-0.166***	-0.167***	-0.164***	-0.154***	-0.126***	-0.081***
Female	-0.518***	-0.536***	-0.527***	-0.532***	-0.529***	-0.495***	-0.458***	-0.448***
Age	0.093***	0.092***	0.081***	0.081***	0.077***	0.073***	0.056***	0.049***
Health	-0.091***	-0.090***	-0.075***	-0.075***	-0.070***	-0.071***	-0.063***	-0.057***
Urban	0.007	0.002	-0.014	-0.014	-0.015	0.021	0.006	0.014
Ethnicity	-0.064**	-0.046	-0.127***	-0.127***	-0.123***	-0.128***	-0.097***	-0.077***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.745***	0.017	0.007	0.035	0.070	0.017	-0.082
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.217***	6.093***	6.538***	6.568***	6.336***	6.572***	6.813***	7.151***
Observations	8,519	8,519	8,519	8,519	8,519	8,519	8,519	8,519
R-squared	0.217	0.230	0.321	0.322	0.330	0.385	0.459	0.520

*** p<0.01, ** p<0.05, * p<0.1

Table 21: Cultural Capital: Cross-sectional wage equations for wave 7 (2015-2017) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.106***	-0.102***	-0.064**	-0.064**	-0.065**	-0.058**	-0.055**	-0.032
NS-SEC 3 origins	-0.175***	-0.154***	-0.086***	-0.086***	-0.087***	-0.080***	-0.070***	-0.045*
NS-SEC 4 origins	-0.346***	-0.318***	-0.186***	-0.186***	-0.184***	-0.157***	-0.118***	-0.073***
NS-SEC 5 origins	-0.311***	-0.275***	-0.143***	-0.143***	-0.146***	-0.133***	-0.112***	-0.067**
NS-SEC 6 origins	-0.319***	-0.276***	-0.128***	-0.128***	-0.126***	-0.117***	-0.096***	-0.039
NS-SEC 7 origins	-0.360***	-0.319***	-0.154***	-0.154***	-0.154***	-0.143***	-0.106***	-0.040
Undefined origins	-0.362***	-0.329***	-0.188***	-0.187***	-0.186***	-0.164***	-0.137***	-0.086***
Female	-0.492***	-0.507***	-0.497***	-0.496***	-0.495***	-0.462***	-0.425***	-0.406***
Age	0.092***	0.092***	0.083***	0.083***	0.079***	0.075***	0.056***	0.051***
Health	-0.111***	-0.111***	-0.093***	-0.093***	-0.089***	-0.089***	-0.075***	-0.065***
Urban	-0.011	-0.016	-0.025	-0.025	-0.028	0.013	-0.001	-0.001
Ethnicity	-0.057**	-0.045	-0.118***	-0.118***	-0.119***	-0.126***	-0.088***	-0.067***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.658***	-0.044	-0.043	-0.022	0.014	-0.019	-0.106*
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.262***	6.145***	6.521***	6.520***	6.263***	6.503***	6.751***	7.066***
Observations	8,323	8,323	8,323	8,323	8,323	8,323	8,323	8,323
R-squared	0.203	0.213	0.299	0.299	0.309	0.365	0.435	0.499

*** p<0.01, ** p<0.05, * p<0.1

Table 22: Cultural Capital: Cross-sectional wage equations for wave 8 (2016-2018) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.143***	-0.138***	-0.093***	-0.093***	-0.091***	-0.090***	-0.074***	-0.053**
NS-SEC 3 origins	-0.227***	-0.206***	-0.129***	-0.128***	-0.126***	-0.118***	-0.097***	-0.070***
NS-SEC 4 origins	-0.358***	-0.333***	-0.194***	-0.194***	-0.192***	-0.175***	-0.132***	-0.092***
NS-SEC 5 origins	-0.322***	-0.290***	-0.140***	-0.141***	-0.140***	-0.137***	-0.106***	-0.070**
NS-SEC 6 origins	-0.347***	-0.307***	-0.148***	-0.148***	-0.148***	-0.146***	-0.115***	-0.069**
NS-SEC 7 origins	-0.407***	-0.369***	-0.189***	-0.188***	-0.188***	-0.188***	-0.141***	-0.070**
Undefined origins	-0.406***	-0.375***	-0.225***	-0.225***	-0.225***	-0.211***	-0.172***	-0.117***
Female	-0.494***	-0.508***	-0.492***	-0.490***	-0.487***	-0.451***	-0.416***	-0.393***
Age	0.096***	0.096***	0.085***	0.085***	0.082***	0.079***	0.060***	0.055***
Health	-0.092***	-0.094***	-0.081***	-0.081***	-0.077***	-0.076***	-0.061***	-0.045***
Urban	-0.002	-0.007	-0.014	-0.014	-0.013	0.017	0.002	0.007
Ethnicity	-0.043	-0.028	-0.103***	-0.103***	-0.100***	-0.115***	-0.086***	-0.056**
Region	✓	✓	✓	✓	✓	✓	✓	✓
Cultural engagement		0.599***	-0.117	-0.113	-0.091	-0.075	-0.113	-0.209***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.224***	6.128***	6.527***	6.515***	6.297***	6.479***	6.741***	7.079***
Observations	7,778	7,778	7,778	7,778	7,778	7,778	7,778	7,778
R-squared	0.215	0.224	0.314	0.314	0.322	0.369	0.430	0.488

*** p<0.01, ** p<0.05, * p<0.1

Table 23: Social Capital: Cross-sectional wage equations for wave 3 (2011-2013) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.128***	-0.126***	-0.069***	-0.070***	-0.072***	-0.062***	-0.057**	-0.036*
NS-SEC 3 origins	-0.185***	-0.180***	-0.075***	-0.076***	-0.079***	-0.074***	-0.062**	-0.036
NS-SEC 4 origins	-0.337***	-0.331***	-0.160***	-0.161***	-0.164***	-0.144***	-0.116***	-0.078***
NS-SEC 5 origins	-0.305***	-0.295***	-0.126***	-0.126***	-0.125***	-0.119***	-0.099***	-0.056**
NS-SEC 6 origins	-0.360***	-0.346***	-0.130***	-0.131***	-0.136***	-0.133***	-0.117***	-0.068***
NS-SEC 7 origins	-0.380***	-0.369***	-0.134***	-0.137***	-0.141***	-0.127***	-0.105***	-0.045*
Undefined origins	-0.365***	-0.347***	-0.147***	-0.149***	-0.148***	-0.134***	-0.111***	-0.069***
Female	-0.505***	-0.438***	-0.450***	-0.458***	-0.458***	-0.432***	-0.398***	-0.387***
Age	0.103***	0.094***	0.081***	0.080***	0.075***	0.072***	0.056***	0.050***
Health	-0.072***	-0.071***	-0.055***	-0.056***	-0.054***	-0.050***	-0.053***	-0.048***
Urban	0.010	0.011	-0.004	-0.003	-0.002	0.020	0.003	0.000
Ethnicity	-0.116***	-0.129***	-0.184***	-0.183***	-0.176***	-0.180***	-0.137***	-0.118***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.119***	0.112***	0.112***	0.110***	0.104***	0.093***	0.089***
Proportion Friends Similar Income		-0.061***	-0.038*	-0.037*	-0.037*	-0.031	-0.031	-0.023
Proportion Friends Similar Education		-0.063***	0.010	0.011	0.009	0.008	0.013	0.015
Proportion Friends Employed		0.011	0.031**	0.031**	0.030**	0.031**	0.026*	0.026*
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.001***	5.903***	6.239***	6.281***	6.073***	6.312***	6.471***	6.846***
Observations	9,037	9,037	9,037	9,037	9,037	9,037	9,037	9,037
R-squared	0.210	0.228	0.331	0.332	0.341	0.380	0.449	0.502

*** p<0.01, ** p<0.05, * p<0.1

Table 24: Social Capital: Cross-sectional wage equations for wave 4 (2012-2014) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.116***	-0.113***	-0.058**	-0.061**	-0.062**	-0.051**	-0.045**	-0.022
NS-SEC 3 origins	-0.186***	-0.178***	-0.070**	-0.073***	-0.077***	-0.068***	-0.057**	-0.037
NS-SEC 4 origins	-0.317***	-0.305***	-0.129***	-0.129***	-0.125***	-0.108***	-0.081***	-0.039
NS-SEC 5 origins	-0.313***	-0.300***	-0.126***	-0.126***	-0.123***	-0.115***	-0.102***	-0.048*
NS-SEC 6 origins	-0.341***	-0.327***	-0.118***	-0.119***	-0.119***	-0.115***	-0.103***	-0.051**
NS-SEC 7 origins	-0.366***	-0.355***	-0.125***	-0.127***	-0.128***	-0.114***	-0.097***	-0.029
Undefined origins	-0.366***	-0.345***	-0.154***	-0.155***	-0.157***	-0.138***	-0.114***	-0.066***
Female	-0.509***	-0.440***	-0.452***	-0.460***	-0.460***	-0.430***	-0.397***	-0.387***
Age	0.100***	0.090***	0.077***	0.077***	0.074***	0.071***	0.056***	0.048***
Health	-0.071***	-0.068***	-0.064***	-0.065***	-0.063***	-0.057***	-0.062***	-0.059***
Urban	-0.011	-0.008	-0.025	-0.024	-0.024	0.005	-0.013	-0.014
Ethnicity	-0.123***	-0.136***	-0.184***	-0.184***	-0.178***	-0.181***	-0.135***	-0.111***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.118***	0.107***	0.107***	0.105***	0.100***	0.086***	0.082***
Proportion Friends Similar Income		-0.073***	-0.044**	-0.043**	-0.046**	-0.041**	-0.043**	-0.035**
Proportion Friends Similar Education		-0.065***	0.003	0.004	0.001	-0.002	0.004	0.009
Proportion Friends Employed		0.034*	0.050***	0.049***	0.049***	0.049***	0.046***	0.043***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.065***	5.968***	6.298***	6.340***	6.148***	6.379***	6.555***	6.957***
Observations	8,769	8,769	8,769	8,769	8,769	8,769	8,769	8,769
R-squared	0.215	0.235	0.342	0.343	0.348	0.393	0.466	0.526

*** p<0.01, ** p<0.05, * p<0.1

Table 25: Social Capital: Cross-sectional wage equations for wave 5 (2013-2015) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.110***	-0.108***	-0.049*	-0.051*	-0.058**	-0.046*	-0.042	-0.015
NS-SEC 3 origins	-0.186***	-0.178***	-0.069**	-0.070**	-0.071**	-0.062**	-0.058**	-0.030
NS-SEC 4 origins	-0.332***	-0.322***	-0.145***	-0.145***	-0.148***	-0.125***	-0.101***	-0.055*
NS-SEC 5 origins	-0.311***	-0.301***	-0.127***	-0.128***	-0.129***	-0.117***	-0.105***	-0.052*
NS-SEC 6 origins	-0.352***	-0.339***	-0.130***	-0.131***	-0.133***	-0.123***	-0.112***	-0.052*
NS-SEC 7 origins	-0.401***	-0.393***	-0.169***	-0.171***	-0.176***	-0.159***	-0.137***	-0.061**
Undefined origins	-0.382***	-0.366***	-0.171***	-0.173***	-0.176***	-0.162***	-0.140***	-0.091***
Female	-0.492***	-0.417***	-0.429***	-0.437***	-0.436***	-0.404***	-0.379***	-0.368***
Age	0.104***	0.094***	0.083***	0.082***	0.079***	0.072***	0.056***	0.050***
Health	-0.090***	-0.089***	-0.071***	-0.072***	-0.072***	-0.062***	-0.062***	-0.062***
Urban	0.026	0.030	0.011	0.013	0.012	0.043**	0.023	0.023
Ethnicity	-0.120***	-0.130***	-0.175***	-0.176***	-0.164***	-0.161***	-0.118***	-0.099***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.129***	0.115***	0.115***	0.111***	0.105***	0.093***	0.087***
Proportion Friends Similar Income		-0.087***	-0.066***	-0.066***	-0.067***	-0.065***	-0.061***	-0.056**
Proportion Friends Similar Education		-0.046**	0.026	0.027	0.026	0.028	0.028*	0.027*
Proportion Friends Employed		0.041**	0.061***	0.060***	0.059***	0.053***	0.048***	0.047***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	5.935***	5.818***	6.125***	6.170***	5.926***	6.177***	6.392***	6.751***
Observations	8,691	8,691	8,691	8,691	8,691	8,691	8,691	8,691
R-squared	0.200	0.220	0.314	0.314	0.324	0.370	0.427	0.476

*** p<0.01, ** p<0.05, * p<0.1

Table 26: Social Capital: Cross-sectional wage equations for wave 6 (2014-2016) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.105***	-0.111***	-0.063**	-0.064**	-0.063**	-0.064***	-0.058**	-0.031
NS-SEC 3 origins	-0.164***	-0.162***	-0.069**	-0.070**	-0.074***	-0.081***	-0.076***	-0.045**
NS-SEC 4 origins	-0.302***	-0.299***	-0.143***	-0.143***	-0.142***	-0.120***	-0.081***	-0.041
NS-SEC 5 origins	-0.319***	-0.313***	-0.137***	-0.137***	-0.139***	-0.133***	-0.111***	-0.064**
NS-SEC 6 origins	-0.332***	-0.320***	-0.129***	-0.128***	-0.130***	-0.127***	-0.105***	-0.048**
NS-SEC 7 origins	-0.363***	-0.359***	-0.150***	-0.150***	-0.146***	-0.146***	-0.116***	-0.045*
Undefined origins	-0.354***	-0.336***	-0.157***	-0.157***	-0.155***	-0.147***	-0.119***	-0.073***
Female	-0.518***	-0.439***	-0.456***	-0.462***	-0.460***	-0.432***	-0.405***	-0.400***
Age	0.093***	0.083***	0.072***	0.072***	0.069***	0.066***	0.049***	0.043***
Health	-0.091***	-0.087***	-0.067***	-0.067***	-0.064***	-0.065***	-0.058***	-0.052***
Urban	0.007	0.013	-0.009	-0.009	-0.010	0.025	0.010	0.017
Ethnicity	-0.064**	-0.075***	-0.128***	-0.127***	-0.125***	-0.131***	-0.098***	-0.075***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.134***	0.118***	0.119***	0.116***	0.107***	0.091***	0.085***
Prop Friends Similar Income		-0.067***	-0.034*	-0.034	-0.035*	-0.031	-0.028	-0.024
Prop Friends Similar Education		-0.062***	0.009	0.009	0.008	0.007	0.008	0.009
Prop Friends Employed		0.050***	0.062***	0.061***	0.058***	0.051***	0.050***	0.050***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.217***	6.095***	6.404***	6.434***	6.227***	6.474***	6.712***	7.034***
Observations	8,519	8,519	8,519	8,519	8,519	8,519	8,519	8,519
R-squared	0.217	0.243	0.341	0.341	0.349	0.400	0.471	0.530

*** p<0.01, ** p<0.05, * p<0.1

Table 27: Social Capital: Cross-sectional wage equations for wave 7 (2015-2017) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.106***	-0.107***	-0.065**	-0.065**	-0.066**	-0.059**	-0.056**	-0.033
NS-SEC 3 origins	-0.175***	-0.173***	-0.086***	-0.086***	-0.087***	-0.081***	-0.070***	-0.043*
NS-SEC 4 origins	-0.346***	-0.344***	-0.191***	-0.191***	-0.189***	-0.163***	-0.124***	-0.077***
NS-SEC 5 origins	-0.311***	-0.314***	-0.154***	-0.154***	-0.157***	-0.144***	-0.123***	-0.074***
NS-SEC 6 origins	-0.319***	-0.309***	-0.128***	-0.128***	-0.126***	-0.119***	-0.097***	-0.039
NS-SEC 7 origins	-0.360***	-0.356***	-0.156***	-0.156***	-0.157***	-0.146***	-0.109***	-0.041
Undefined origins	-0.362***	-0.345***	-0.178***	-0.178***	-0.177***	-0.157***	-0.131***	-0.079***
Female	-0.492***	-0.409***	-0.423***	-0.423***	-0.423***	-0.397***	-0.370***	-0.355***
Age	0.092***	0.081***	0.073***	0.074***	0.070***	0.067***	0.049***	0.045***
Health	-0.111***	-0.106***	-0.085***	-0.085***	-0.081***	-0.082***	-0.070***	-0.060***
Urban	-0.011	-0.007	-0.021	-0.021	-0.023	0.016	0.001	0.001
Ethnicity	-0.057**	-0.063**	-0.111***	-0.112***	-0.113***	-0.122***	-0.084***	-0.061***
Region	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.144***	0.128***	0.128***	0.125***	0.114***	0.099***	0.097***
Prop Friends Similar Income		-0.045**	-0.022	-0.022	-0.022	-0.022	-0.021	-0.023
Prop Friends Similar Education		-0.044**	0.026	0.026	0.025	0.024	0.028*	0.031**
Prop Friends Employed		0.056***	0.066***	0.066***	0.063***	0.056***	0.050***	0.041***
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.262***	6.137***	6.375***	6.371***	6.138***	6.389***	6.635***	6.935***
Observations	8,323	8,323	8,323	8,323	8,323	8,323	8,323	8,323
R-squared	0.203	0.232	0.323	0.323	0.331	0.383	0.450	0.511

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 28: Social Capital: Cross-sectional wage equations for wave 8 (2016-2018) using the dominance approach. Dependent variable: natural logarithm of gross monthly pay in £. Reference category: Higher Managerial and Professional Origins (NS-SEC 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NS-SEC 2 origins	-0.143***	-0.143***	-0.093***	-0.093***	-0.091***	-0.090***	-0.075***	-0.053**
NS-SEC 3 origins	-0.227***	-0.225***	-0.128***	-0.127***	-0.126***	-0.118***	-0.097***	-0.068***
NS-SEC 4 origins	-0.358***	-0.357***	-0.197***	-0.198***	-0.196***	-0.179***	-0.136***	-0.094***
NS-SEC 5 origins	-0.322***	-0.328***	-0.151***	-0.152***	-0.151***	-0.147***	-0.114***	-0.076***
NS-SEC 6 origins	-0.347***	-0.338***	-0.145***	-0.145***	-0.146***	-0.145***	-0.113***	-0.065**
NS-SEC 7 origins	-0.407***	-0.405***	-0.190***	-0.189***	-0.190***	-0.190***	-0.143***	-0.068**
Undefined origins	-0.406***	-0.388***	-0.212***	-0.212***	-0.213***	-0.201***	-0.164***	-0.108***
Female	-0.494***	-0.413***	-0.423***	-0.420***	-0.418***	-0.389***	-0.367***	-0.349***
Age	0.096***	0.085***	0.075***	0.076***	0.073***	0.071***	0.053***	0.049***
Health	-0.092***	-0.090***	-0.076***	-0.076***	-0.072***	-0.073***	-0.059***	-0.044***
Urban	-0.002	0.001	-0.011	-0.011	-0.010	0.019	0.003	0.008
Ethnicity	-0.043	-0.049*	-0.096***	-0.097***	-0.095***	-0.110***	-0.080***	-0.048**
Region	✓	✓	✓	✓	✓	✓	✓	✓
Best Friends Employed		0.135***	0.119***	0.119***	0.117***	0.108***	0.091***	0.084***
Prop Friends Similar Income		-0.060**	-0.039*	-0.039*	-0.039*	-0.042**	-0.034*	-0.043**
Prop Friends Similar Education		-0.042**	0.025	0.025	0.024	0.023	0.025	0.031**
Prop Friends Employed		0.050***	0.061***	0.061***	0.057***	0.045***	0.041***	0.036**
Education			✓	✓	✓	✓	✓	✓
Work sector				✓	✓	✓	✓	✓
Permanent Job					✓	✓	✓	✓
Firm size						✓	✓	✓
Managerial duties							✓	✓
Occupational status								✓
Constant	6.224***	6.138***	6.402***	6.386***	6.186***	6.375***	6.630***	6.954***
Observations	7,778	7,778	7,778	7,778	7,778	7,778	7,778	7,778
R-squared	0.215	0.241	0.334	0.335	0.342	0.385	0.441	0.498

*** p<0.01, ** p<0.05, * p<0.1