Resolution Foundation | Commission on Living Standards

Missing out

Why ordinary workers are experiencing growth without gain

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The Resolution Foundation Commission on Living Standards:

Improving the lives of people on low-to-middle incomes

The Commission on Living Standards is an independent and wide-ranging investigation into the pressures facing people on low-to-middle incomes in modern Britain. Its work is focused on the long-term economic trends that are changing the reality of life on a low-to-middle income, from trends in the jobs market and tax-benefit system, to new pressures from the cost of living and modern working patterns.

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Executive summary

It is a central assumption of modern, democratic economies that economic growth leads to rising living standards for the great majority of people. Now, evidence is emerging that questions that assumption. Median wages in the UK were stagnant from 2003 to 2008 despite GDP growth of 11 per cent in the period. Similar trends are evident in other advanced economies from the US to Germany. For some time, the pay of those in the bottom half of the earnings distribution has failed to track the path of headline economic growth.

If a central goal of government is to secure a new period of rising living standards then these trends point to one of the great economic challenges of our time: the need to restore the link between economic growth and the pay of ordinary working people. That challenge raises a number of immediate questions. Which factors decide whether the pay of ordinary workers rises when the economy grows? How have these factors changed over time in the UK? How have changes in the UK's industrial make-up affected these trends?

This paper builds on our earlier work[1] by considering these questions in more detail. We use the wages of those in the bottom half of the earnings distribution as a proxy for the earnings of people on low-to-incomes.[2] Our focus is specifically on *earnings* and the outcomes of the jobs market before the redistribution that is carried out by government through taxes and benefits.[3] As with all of the work of the *Commission on Living Standards*, our concern is not the immediate fallout from the recent recession but longer term trends.

Where does the value generated by the UK economy go?

Economic growth is most commonly reported in terms of gross domestic product (GDP), which measures the value produced – in terms of goods and services – by all firms and workers in the nation. Therefore, if all else remains equal, the pay of ordinary workers rises in line with the value generated by economic growth. But if the *distribution* of the added value changes of over time – if it moves from one group of recipients to another – that relationship may weaken.

Over the past three decades, this is precisely what has happened in the UK. **In 1977, of every £100 of value generated by the UK economy, £16 went to the bottom half of workers in wages; by 2010 that figure had fallen to £12, a 26 per cent decline**.[4] Indeed, the trend may be even starker: inclusion of bonus payments reduces the bottom half's share to just £10 in 2010.[5]

In simple terms, the value generated by an economy feeds through into wages for the bottom half in three steps. Those three steps help us to understand the nature of the decline in the share going to ordinary workers:

[1] Plunkett, James, Resolution Foundation, *Growth without gain? The faltering living standards of people on low-to-middle incomes*, May 2011
[2] See Box 1 for a full explanation.
[3] The Commission will be examining the impacts of the tax-benefit system later in the course of its work.
[4] Of the remainder in 2010, £39 went to the top half of workers, £11 was paid by employers in the form of social contributions and £39 went to businesses and owners in the form of profits.
[5] No comparable figure is available for 1977 but, over the period for which comparable data *is* available (1999-2008), the share of value accounted for by the bottom half declined more quickly when bonuses were included than when they were excluded.

- First, the value generated by the economy accrues either to employees in the form of remuneration (labour share), or to corporations and shareholders in the form of profits (capital share). Over the period considered in this paper, the share of value that goes to employees declined, while the share going to profits increased. **This shift explains one-seventh (14 per cent) of the decline in the share of overall value accruing to the wages of the bottom-half of workers**.

- Secondly, within the share of value that goes to workers, a portion is paid out in the form of wages and salaries (wage share) and a portion is taken up by the social contributions of employers (from employer National Insurance payments to pension contributions). **The decline in the former over the period, and the increase in the latter, explains one-sixth (16 per cent) of the fall in share experienced by the bottom half of employees**.

- Thirdly, wages and salaries are shared out between employees across the earnings distribution. In the years analysed here, growing wage inequality meant that a smaller share found its way to employees in the bottom half. **These changes in the distribution of wages explain the majority – 70 per cent – of the decline in the share of value added accounted for by the bottom half of earners**.

It is important to note that wages are not the only form of income; the tax-benefit system and public services also play an important role. Some of the trends we outline, for example rising employer National Insurance contributions (NICs), serve to both shrink the wage-pot and boost other aspects of well-being; for example by funding investment in public services. Earnings though remain by far the largest component of household income – on average comprising three-quarters of gross income among low-to-middle income households[6] – and are the focus of this paper.

What has changed in the UK economy to account for these trends?

In the past 30 years, important cross-cutting trends, such as technological advances and the wage-returns to education and skills, have driven changes in the distributions of rewards *within* all sectors of the UK economy. At the same time, significant changes in the nation's industrial structure have produced shifts *between* sectors.

In the case of the growing share of value that goes to profits rather than to workers, the trend was driven primarily by the shift in the economy from *industry* (covering manufacturing jobs in the main), where a relatively high share of value is distributed to workers, to the *finance & business activities* sector, where more value is retained as profits rather than being distributed to workers.

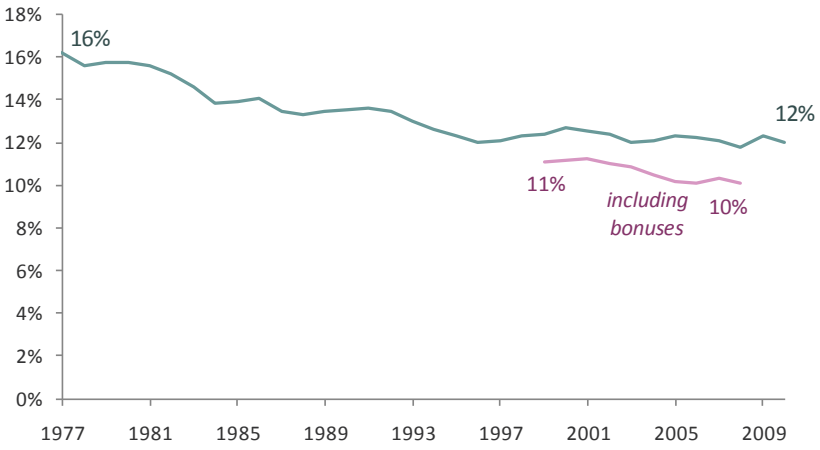
When it comes to the second factor, the proportion of labour's 'pie' that goes to salaries rather than to employer NICs or pension contributions, the overall growth in employer social contributions occurred largely because of government policies that affected all industries, not because of shifts in the underlying sector mix.

Finally, in the case of the third and most important trend – the **rise in wage inequality** – the aggregate level **picture was driven by growth in pay dispersions across all sectors**, with the *finance*, *business activities* and *retail* sectors recording particularly high levels of wage inequality in 2010.

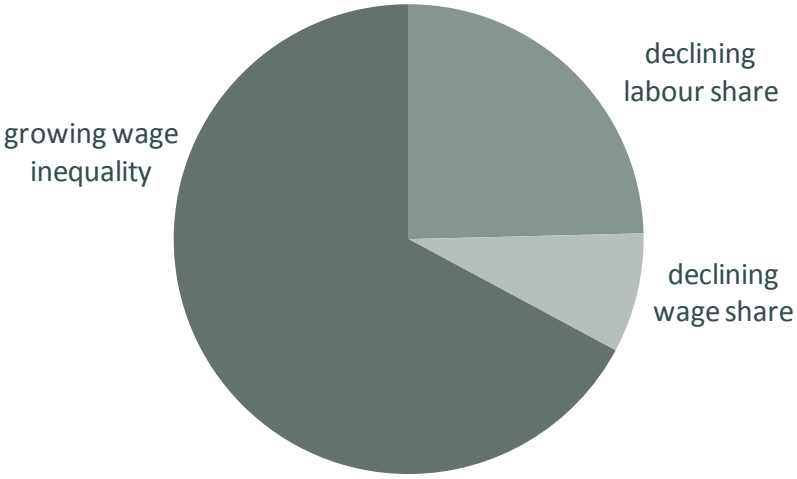
[6] See Section A1 of the Technical Appendix.

Summary of findings

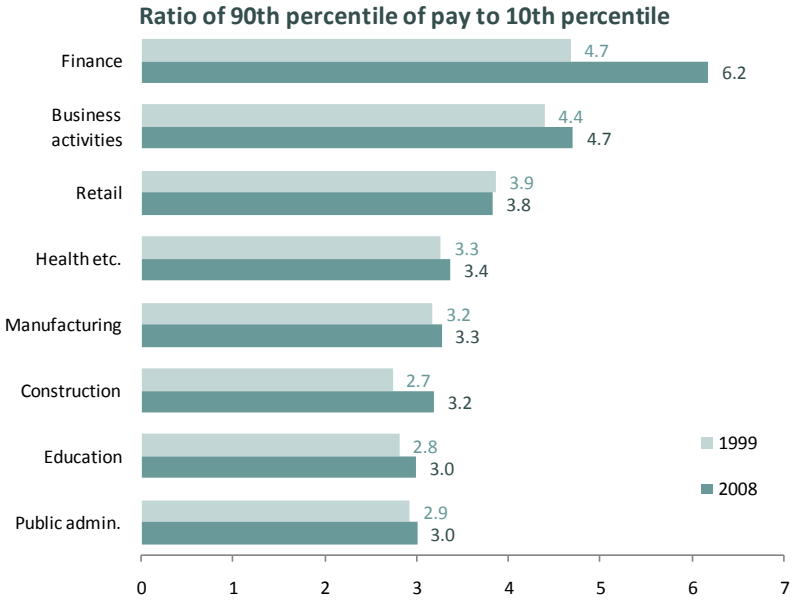
The share of national income associated with growth that is accounted for by the wages of workers in the bottom half of the earnings distribution has declined by one-quarter over the past 30 years...



One-third of the decline can be explained by an overall reduction in the size of wage pie associated with falling labour share and wage share; however, growing wage inequality has been much more influential...



Which in turn has been driven primarily by changes in inequality within all sectors of the economy - rather than shifts in the industrial structure; the trend in inequality in recent years has been dramatically more pronounced in the finance sector.



Structure of the report

The report is structured as follows:

- **Chapter 1** begins by setting out how the value generated by the UK economy translates into pay for workers in the bottom half. It sets out the problem we are seeking to explain, that the share of value of going to ordinary workers in the form of pay has declined;
- **Chapter 2** looks at the extent to which these shifts derive from changes in the three factors that explain the distribution of value – described in shorthand as the 'labour share of income', the 'wage share of employee compensation' and the 'wage distribution' – quantifying the contribution of each;
- **Chapter 3** considers how these aggregate level trends have been influenced by different sectors in the UK economy, identifying in particular the extent to which they are due to shifts in the UK's industrial structure and the extent to which they are due to more general, economy-wide trends;
- **Chapter 4** concludes and sets out plans for future work on a series of important questions that remain unanswered by this report.

A **Technical Appendix** contains a number of additional analyses and discussions that some readers will find useful.

1 When the UK economy grows where does the value go?

In 1977, of every £100 of value generated in the UK economy, workers in the bottom half of the earnings distribution received £16 in the form of wages; by 2010 this share had fallen by a quarter to £12. Workers in the top ten per cent increased their share of value from £12 to £14 over the same period (a 22 per cent rise). The share of the top 1 per cent grew from £2 to £3, a rise of 58 per cent.

The UK economy nearly doubled in value in real terms over the same period (93 per cent increase). But just 8 per cent of this growth was accounted for by the wages of workers in the bottom half of the earnings distribution. By contrast, workers in the top half accounted for 39 per cent of the total, with those in the top 1 per cent alone sharing 4 per cent of the proceeds.

This chapter begins by explaining where the value generated by the UK economy goes. Specifically, we set out the link between GDP – or the value that is generated by the UK economy – and the wages of employees in the bottom half of the earnings distribution. We then look at long-term trends in the proportion of value generated by the economy that accrues to workers in the bottom half of the earnings distribution in the form of wages.

1.1 The relationship between GDP and wages

GDP is the most common measure of national economic output.[7] It includes a measure of wages, alongside a number of other components. Put simply, GDP is equal to:

	Compensation of employees	*total remuneration to employees for work done, comprising wages and salaries (cash and in-kind) and employer contributions to social security and other such programs*
+	**Gross operating surplus**	*the surplus (or profits) due to owners of incorporated businesses*
+	**Gross mixed income**	*the surplus (or profits) due to owners of unincorporated businesses*
+	**Taxes on production and imports**	*levied by government*
-	**Subsidies on production and imports**	*paid by government*

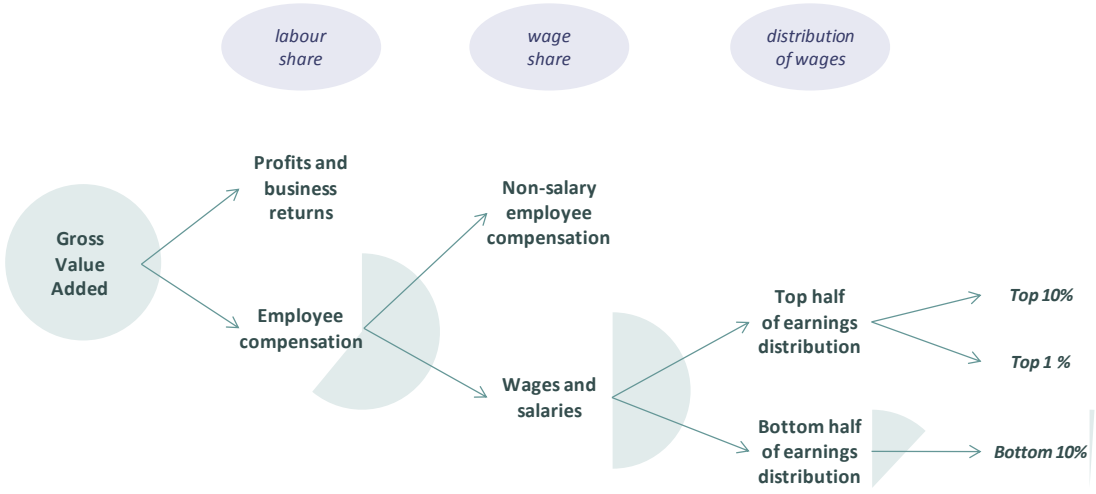
[7] This definition is based on the 'income method' of calculating GDP. In national accounts there are three methods for measuring GDP; income, expenditure and output. Each method arrives at (broadly) the same result, but reaches it by counting different elements of economic output. The income method – GDP(I) – adds up all income earned by resident individuals (*employee compensation*) or corporations (*capital share*) in the production of goods and services. Some types of income are not included; transfer payments like unemployment benefit, child benefit or state pensions. Although they do provide individuals with money to spend, they are a redistribution of existing incomes and do not represent any addition to current economic activity. Note that for the public sector, GDP(I) is almost entirely based on compensation of employees; public corporations will earn profits and some public sector agencies/departments may earn rental income, but the overwhelming majority of GDP for the public sector comprises of salary costs. More detail is provided in the ONS publication *United Kingdom National Accounts Concepts Sources and Methods*.

To understand the link between GDP and wages, we can remove taxes and subsidies from the equation set out above in order to focus on production at basic prices. This measure captures the value that is generated by any unit engaged in production (for example, an employee at work or a machine producing goods), and covers both the private and public sectors. In a simple sense, it tells us the value that is generated by the UK economy. This 'value generated by the UK economy' will be referred to hereafter by its technical name, 'Gross Value Added' (GVA). It is this value that we are interested in 'tracking' through to the pockets of ordinary workers.

There are three 'stages' to the relationship between the overall value generated in the economy and the proportion of that value that ends up in the pockets of workers in the bottom half of the earnings distribution in the form of wages:

- First, the value generated by the economy can flow either to workers or to 'capital'. That is, of every £1 of value generated by the UK economy, a part goes to employees and a part to profits. The part that goes towards employees is known as the 'labour share'.[8]
- Second, of the proportion of value that goes to employees, only part finds its way into wages and salaries. This is known as the 'wage share'. The remainder goes into indirect employee benefits associated with employer social contributions (the largest part of which is employer NICs and pension contributions).
- Third, this final pot of wages and salaries is distributed by the market across all employees (the 'distribution of wages'). A portion goes to workers in the bottom half of the earnings distribution and a portion to workers in the top half.[9]

The diagram below sets out this three-stage relationship:



[8] See for example, ILO, *Global Wage Report 2010* or Lansley, Stewart, *Unfair to Middling: How Middle Income Britain's shrinking wages fuelled the crash and threaten recovery*, TUC Touchstone Extras, 2009

[9] It is important to take this decomposition in the context of a broader understanding of the ways in which benefits accrue to households. For example, because GVA records income before the interaction between workers and the state, it measures employer but not employee taxes. Our decomposition therefore does not take account of the living standard effect of movements between employee and employer taxes. That is, a rise in employer NICs reduces the wage share and therefore the GVA share flowing to workers in the bottom half of the earnings distribution, but an increase in employee NICs or income tax has no corresponding effect, even though it would leave members of the group equally worse off in terms of disposable income.

1.2 The share of value going to workers in the bottom half

Figure 1 details the breakdown of value, and shows how it was distributed over time, in the period 1977-2010. It splits out the proportion of value that accrues to capital in the form of profits, to non-salary employee compensation (employer NICs and pension contributions), and to wages in both the top and bottom half of the earnings distribution. It shows that workers in the bottom half of the earnings distribution accounted for a declining share of GVA over the period. Their share fell from 16 per cent in 1977, to 12 per cent in 2010.

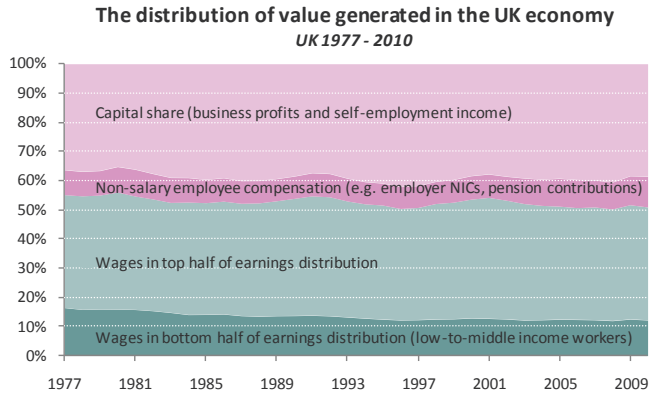


Figure 1: Breakdown of gross value added by destination of income: UK 1977-2010

Notes: Capital share is 'one minus' labour share. Wage period used to determine earnings distribution is weekly and covers all employees – i.e. full-time and part-time. It is based on earnings data taken from the *Annual Survey of Hours and Earnings* (ASHE), covering Great Britain pre-1997 and the UK thereafter.

Sources: OECD, Stat; RF analysis of ONS, *ASHE*

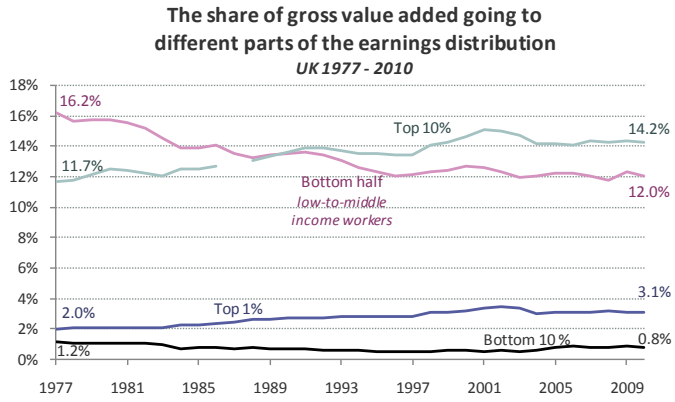


Figure 2: Share of GVA by earnings percentile groups: UK 1977-2010

Note: Based on weekly wages among all employees.

Sources: OECD, Stat; RF analysis of ONS, *ASHE*

In the same period, there was a (rounded) 2 percentage point increase in the share of value that accrued to capital, from 36 per cent to 39 per cent, along with a 2 percentage point increase in the share of non-salary employee compensation from 9 per cent to 11 per cent.

Those in the top half of the wage distribution increased their share of the declining pot of wages, and thereby maintained a broadly constant overall share of GVA of 39 per cent.

Figure 2 drills down to focus on the share of GVA that flowed to employees across the earnings distribution. While the top 1 per cent of earners steadily increased their share of GVA, from 2 per cent to 3.1 per cent, the bottom 10 per cent's share fell to less than 1 per cent.

At the start of the period, the top 10 per cent of earners accounted for a smaller share of GVA than the bottom 50 per cent of workers (11.7 per cent and 16.2 per cent respectively). By 1990 this situation reversed, and by 2010 the top 10 per cent of earners accounted for 14.2 per cent of GVA, while low-to-middle income workers[10] accounted for just 12 per cent.

In other words, for every £100 of value created by the UK economy, £12 ended up as pay in the pockets of the bottom half of earners, compared to £16 in 1977. It is interesting to note that the rising share of GVA going to the top 10 per cent of earners took place *even as the overall share of wages declined*: these high earners were receiving a bigger slice of a shrinking pie.

[10] See Box 1 for an explanation of why we consider the bottom half of the earnings distribution to be a reasonable, if imperfect, proxy for the low-to-middle income group.

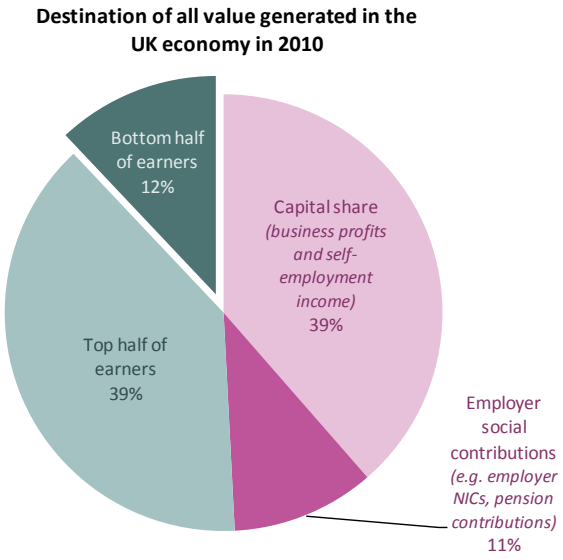


Figure 3: Breakdown of GVA in 2010: UK

Note: Based on weekly wages among all employees.

Source: OECD, Stat; RF analysis of ONS, *ASHE*

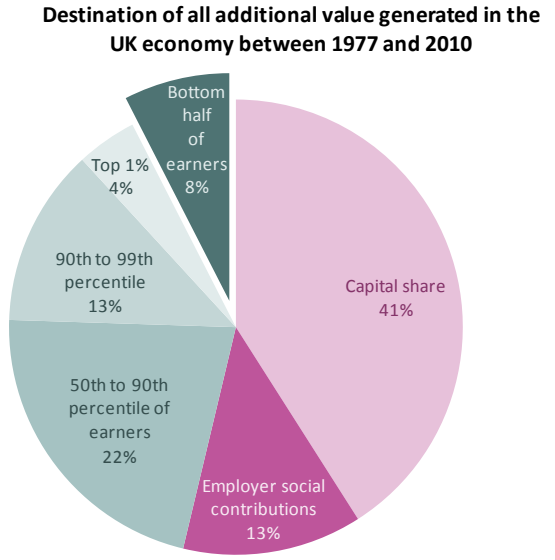


Figure 4: Breakdown of increase in GVA recorded between 1977 and 2010: UK

Note: Based on weekly wages among all employees.

Source: OECD, Stat; RF analysis of ONS, *ASHE*

Figure 3 shows how total generated value was distributed across different recipients in 2010, with the green sections detailing the proportion going to workers in the form of wages and the dark green section relating specifically to those in the bottom half of the distribution.

While all of the analysis above is focused on describing the distribution of GVA *within each year* (and the change in this distribution over time), an alternative calculation involves determining the allocation of the *overall increase* in value added over the 30 year period. Figure 4 sets out some results.

It shows that less than half of the overall value added was paid out as wages, with two-fifths (41 per cent) of the total going to capital/profits.

The bottom half of accounted for just 8 per cent of the total, compared with 39 per cent among the top half of workers (*50th to 90th percentile of earners* plus *90th to 99th* plus *top 1%*).

The top 1 per cent alone accounted for around half as much (4 per cent) as the entire bottom half, while the top 10 per cent received more than twice the share (17 per cent) of these ordinary workers.

1.3 The increasing importance of bonuses

The analysis above reveals important changes in the shares of value that go to different parts of the workforce. It is important to note though, that this analysis uses data for *weekly* earnings. This data understates the true value of remuneration for some members of the distribution – particularly

those at the top – because incentive payments (e.g. bonuses) are typically paid on an annual basis and are not accurately captured as weekly equivalents.[11]

The level of understatement is likely to have grown over time, because bonus payments have become more important aspects of remuneration, adding significantly to overall pay in some occupations. For example, in 2002 bonus payments made up 13 per cent of average pay in the *finance* sector; by 2008 they had jumped to 23 per cent.[12]

To better capture the effect of incentive pay, we can repeat the GVA share calculations carried out above using earnings distribution data based on reported *annual* salaries, which more accurately picks up the effects of bonuses. Unfortunately such data is only available in comparable form from 1999 so we cannot track trends over the longer period.

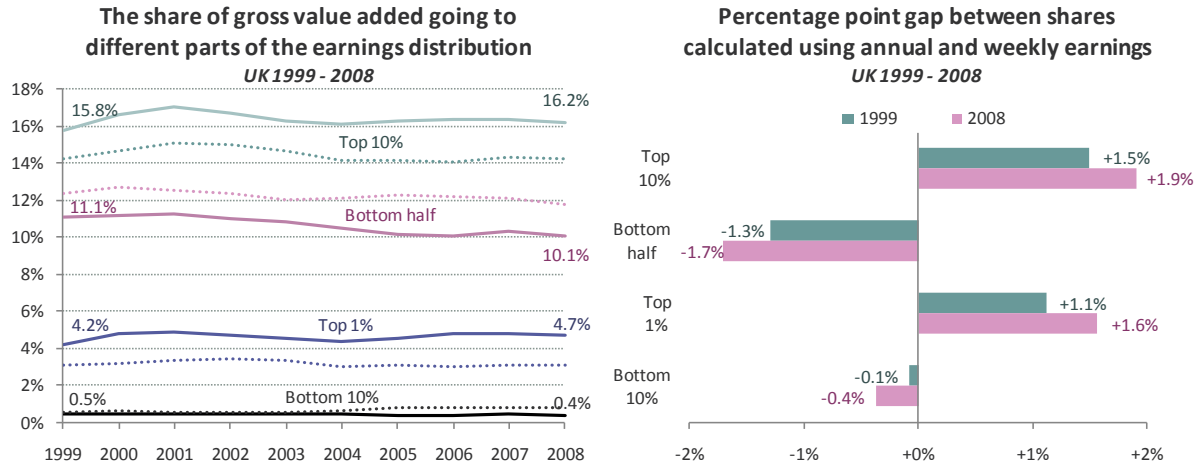


Figure 5: Differences in shares of GVA by earnings percentile groups calculated using annual and weekly earnings data: UK 1999-2008

Notes: Solid lines based on annual wages (including bonuses) among all employees. Dotted lines based on weekly wages (with estimated weekly equivalents of bonuses) among all employees. Data labels refer to annual wages-based GVA shares only.

Sources: OECD, Stat; RF analysis of ONS, *ASHE*

Figure 5 sets out the results. The dotted lines in the left hand chart relate to the weekly data we have already discussed (and are the same as those presented in Figure 2). The solid lines show that when incentive payments are more accurately captured, the differences in the fortunes of high- and low-paid workers are even more divergent.

Inclusive of bonus payments, the top 10 per cent and top 1 per cent of earners accounted for 16.2 per cent and 4.7 per cent of GVA respectively in 2008, compared with 14.3 per cent and 3.1 per cent using weekly earnings data. Conversely, the bottom half of earners and the bottom 10 per cent

[11] Prior to 1997, the ASHE and New Earnings Survey – which form the basis of the earnings distribution analysis in Figure 1 and Figure 2 – only asked directly for details of *weekly* wages for employees. Other earnings variables such as *hourly* and *annual* are included in those datasets, but are simply derived from the weekly wage measure. Respondents to the ASHE survey were asked to include incentive payments by calculating weekly equivalents of their annual receipts. However, the reliability of such estimates is questionable. Only since 1999 has ASHE directly asked respondents for annual earnings and annual incentive payments.

[12] This is considerably higher than the proportion in the next highest sector – *business activities, real estate & renting* – in which bonus payments accounted for just 7 per cent of average earnings.

accounted for 10.1 per cent and 0.4 per cent respectively, compared with 11.8 per cent and 0.8 per cent using weekly data.

It is also notable that the gaps between the GVA shares calculated using annual and weekly earnings data increased over the period for each section of the earnings distribution, reflecting the growing importance of incentive pay in labour remuneration. For example in 1999, the share of GVA of the bottom half of workers was 1.3 percentage points lower when calculated using annual, rather than weekly, earnings data; by 2008 the gap had widened to 1.7 percentage points.

As noted elsewhere by Bell and Van Reenen,[13] bonuses have been an increasingly important channel through which the highest earners have captured value generated by the UK economy. Indeed, when bonuses are included, the story of pay distribution in the last ten years changes quite significantly. For example, using annual earnings data the share of GVA going to the bottom half of the earnings distribution *declined* in the last decade rather than staying flat (as it did on a weekly data basis). The portion going to the bottom 10 per cent also fell, rather than increasing as it does when weekly earnings are used. Conversely, the share of GVA going to the top 10 per cent and top 1 per cent *increased*, rather than remaining flat as it does when weekly earnings are used.

[13] Bell, Brian and Van Reenen, John, 'Bankers' pay and extreme wage inequality in the UK', Centre for Economic Performance, London School of Economics, 2010

Box 1: Situating low-to-middle income adults in the earnings distribution

The Commission's work, and the wider work of the Resolution Foundation, focuses on people living on low-to-middle incomes. By that we mean people living in households below middle (median) income, but above the bottom 10 per cent, and not heavily reliant on means-tested benefits.

In conceptual terms, the intention of our work is to focus on a group that is too rich to be traditionally considered in need of state support, yet too poor to thrive independently. In technical terms, our definition is: adults living in working-age households in income deciles 2-5 who receive less than one-fifth of their gross household income from means-tested benefits (excluding tax credits). For the purposes of the income distribution we use 'equivalised' household incomes, to take account of the importance of different household sizes and compositions.

Defined as above, 11 million working-age adults live in low-to-middle income households in the UK, making up around one-third of the working-age population. Because the Resolution Foundation's definition takes into account household size, the income boundaries of the group depend on the number of children living in a household. For example, couples with no children fall into the group if their incomes range from £12,000-£30,300 a year (from all sources), while couples with three children fall into the group if their incomes range from £19,200-£48,500 a year.

It is important to note that while our definition is income-based, in this report we are primarily focused on *earnings*. Figure B1 shows that 78 per cent of working adults living in low-to-middle income households are located in the bottom half of the earnings distribution (deciles 1-5). Figure B2 shows that 51 per cent of adults in the bottom half of the earnings distribution live in low-to-middle income households. In this report we therefore take the bottom half of the earnings distribution to be a reasonable, if imperfect, proxy for the low-to-middle income group.

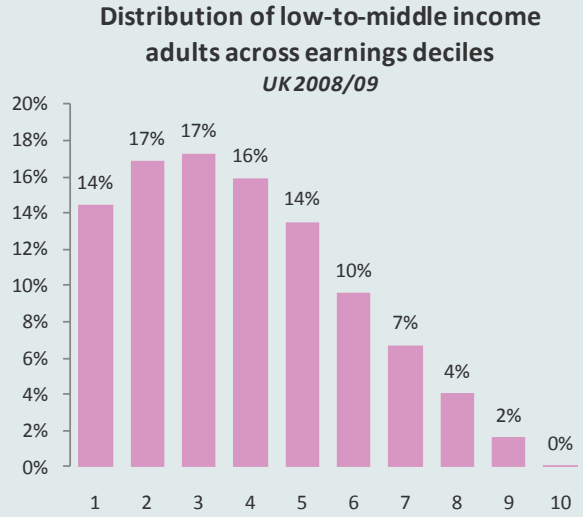


Figure B1: Distribution of low-to-middle income adults across earnings deciles: UK 2008/09

Note: Earnings distribution includes all employees – i.e. full-time and part-time

Source: Resolution Foundation analysis of DWP, *Family Resources Survey 2008-09*

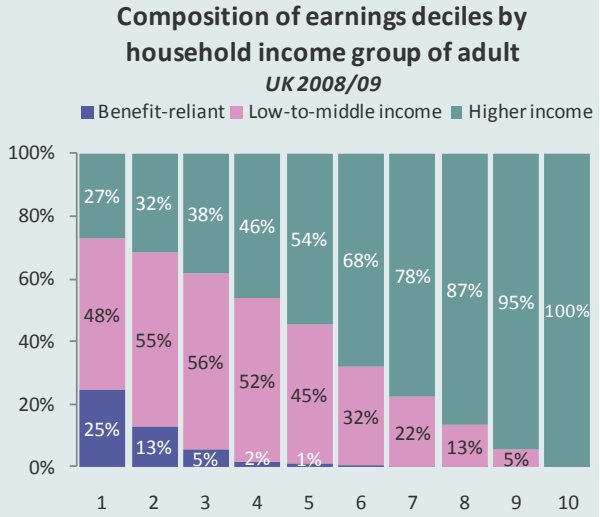


Figure B2: Composition of earnings deciles by household income group of adult: UK 2008/09

Note: Earnings distribution includes all employees – i.e. full-time and part-time

Source: Resolution Foundation analysis of DWP, *Family Resources Survey 2008-09*

2 What explains the declining share of workers in the bottom half?

*The trends in GVA identified in the previous chapter can be attributed to three factors. First, over the 30 years considered, the **share of value going to labour diminished**, while the share going to capital/profits grew. Secondly, within the share of value going to labour, the **portion paid as wages fell** because employer social contributions like NICs increased. Thirdly, this **reduced pot of wages became less equally distributed**, such that workers in the bottom half lost share while earners at the top of the distribution gained it. This **growing wage inequality accounts for the majority – 70 percent – of the overall decline in the share of gross value added that flowed into the wages for the bottom half**.*

In this chapter we consider the three factors that lie behind the decline in the share of GVA accounted for by workers in the bottom half in the past 30 years: the *labour share of income*, the *wage share of employee compensation* and the *wage distribution.* We calculate the specific contributions made by each of these factors to trends in the share of GVA going to the wages of the bottom half of employees.

It is important to bear in mind that wages are not the only form of income, and some of the trends we outline in this chapter have the effect of reducing the share of GVA going to the bottom half in the form of wages, but potentially benefit them in other ways. For example, growth in employer NICs might feed through into higher investment in public services, while shareholders in the group may have benefited from increasing returns. That said, earnings are by far the largest component of household income, comprising three-quarters of gross income on average among low-to-middle income households,[14] so it is important that we understand their drivers.[15]

2.1 The share of income going to labour

If we return to the equation set out in Chapter 1 (p6), we can see that the value that is generated by the UK economy can be expressed as the sum of 'employee compensation' and 'profits and business returns'. The first part of this equation is known as the *labour share of income*; the latter part is known as the *capital share*. The *labour share* is calculated by dividing employee compensation in each sector of the UK economy by the associated GVA[16] and producing a composite based on the contribution of each sector to the aggregate level GVA. In simple terms, this gives us a sense of the proportion of value that accrues to labour as opposed to the owners of capital.

[14] See Section A1 of the Technical Appendix for more detail.
[15] We also make no attempt in this chapter to determine whether any movement between capital and labour, and between workers at different points in the earnings distribution simply reflects the distribution of productivity. This question will be considered in more detail in a forthcoming paper for the Resolution Foundation by Professor John Van Reenen of the London School of Economics.
[16] In nominal terms and at factor cost.

This relatively straightforward equation is complicated by the presence of the self-employed in the capital share part of the expression rather than in the employee compensation element.[17] In other words, the compensation of people who are self-employed is categorised in the capital share rather than in the labour share (because self-employed workers are, in effect, simply retaining the profits of their business). As a result, if underlying economic trends, definitional changes or tax incentives mean that the proportion of people are who are self-employed has risen over time, the labour share measure as defined above will under-report the value that accrues to 'workers' in the way we might typically view them.

To understand the importance of this we can calculate a second, *adjusted*, labour share by applying a self-employment ratio to the initial labour share.[18] This approach is imperfect because it assumes that labour compensation per person is equivalent between the self-employed and paid-employees. For this reason, and because the wage distribution stage of the GVA equation relates exclusively to employees, we concentrate in this paper on the unadjusted labour share data. Our conclusions should therefore be seen as applying to *employees*, rather than workers in the more general sense.

Nevertheless, it is worth briefly considering the adjusted labour share. As Figure 6 shows, once controlled for a long-term rise in self-employment, the UK labour share has been broadly flat over the past 30 years, ending the period slightly higher than it began.[19]

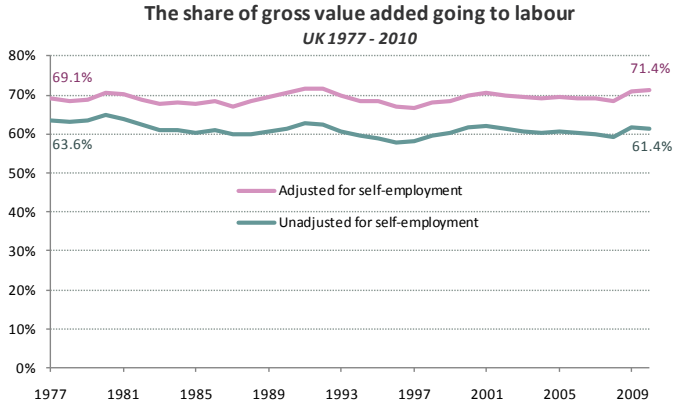


Figure 6: Labour share of gross value added: UK 1977–2010

Note: Unadjusted data divides total compensation of employees by gross value added at factor cost. Adjusted data applies a self-employment ratio.

Source: OECD, Stat

Turning to the unadjusted labour share data, as Figure 6 highlights, profits tend to fall more sharply during a recession than wages, and recover more quickly afterwards. The labour share therefore displays counter-cyclical movements (declining during recoveries and increasing during recessions, such as the one beginning in 2008). However, over several economic cycles, there has been a slight, but persistent, long-run downward trend in the labour share.

As such, the proportion of GVA accounted for by employee compensation declined from 64 per cent in 1977, to 61 per cent in 2010.[20]

In percentage terms, this decline may not appear to be significant but it equates to £29 billion in 2010 prices, which is equivalent to around £1,200 per employee per year.

[17] The *gross mixed income* section of the GDP equation effectively covers the operating surplus of unincorporated enterprises owned by households, which implicitly includes remuneration for work done by the owner or other members of the household. This remuneration cannot be identified separately from the return to the owner as entrepreneur.

[18] Total employment in each sector divided by numbers of employees in each sector. Strictly speaking, hours-worked data is better still, but such data is often unreliable.

2.2 The share of labour's income going to wages

The share of value accounted for by the overall pot of employee compensation can therefore be seen to have declined over time. What has happened within that pot? We turn now to the second stage in the distribution of value added; the portion of the labour share that flows to employees in the form of wages and salaries, and the portion that is paid out by employers in the form of social payments such as NICs and pension contributions.[19]

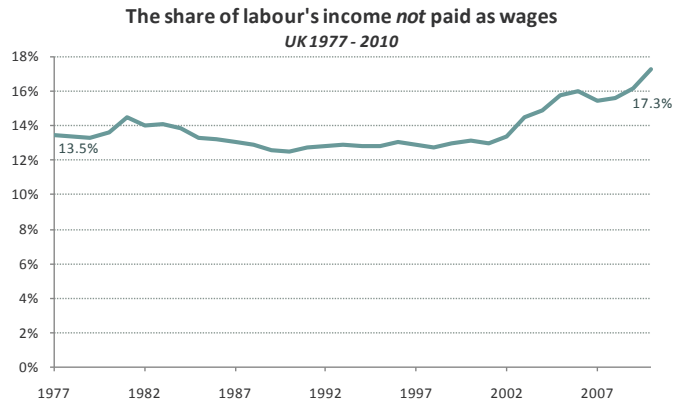


Figure 7: Non-salary rewards as proportion of total employee compensation: UK 1977-2010

Notes: Includes expenditure by employers on retirement programmes, health care or health insurance, unemployment compensation, disability insurance, other forms of social insurance, non-cash supplements (e.g., free or subsidised housing), maternity benefits, free or subsidised child care, and such other fringe benefits. Expenditure does not include contributions made by the employees themselves, or deducted from their gross salaries.

Source: OECD, Stat

Figure 7 sets out the proportion of the labour share that does *not* take the form of salaries paid to employees. This includes employers' social contributions, including employer NICs, employer pension contributions (including an imputed value for unfunded benefits) and employer health insurance payments for example. It does *not* include contributions made by employees themselves, such as employee NICs.

It shows a clear increase in the share of total labour rewards being paid as non-salary compensation over the period. Having accounted for around 14 per cent of total employee compensation in 1977, the non-salary share rose to 15 per cent by 1981. It subsequently fell slightly, but increased once again at the end of the period, from 13 per cent in 2001 to 17 per cent in 2010. The rise since 2001 is particularly marked.

The converse of this increase is a decline in the wage share of employee compensation, from 87 per cent in 1977 to 83 per cent in 2010. Again, in terms of their cash value these trends are not trivial. If we use the actual labour share figures recorded over the period, but this time hold constant the proportion of employee compensation paid as wages and salaries, the overall wage pot would have been worth in the region of £30 billion more in 2010; equivalent once again to around £1,200 per employee per year.

[19] More detailed discussion of the adjusted labour share, and its implications for our analysis, is presented in section A2 of the Technical Appendix.

[20] Earlier labour share data is available, but a dramatic (and temporary) squeeze on profits associated with the oil price crisis in the mid-1970s means that it is more appropriate to use this later start year.

[21] As described in Chapter 1, the wage share includes employee wages and salaries paid both as cash and in-kind (that is, an imputed amount is included to cover the cost of non-cash rewards such as free use of leisure facilities or season ticket loans).

The combined impact of the declining labour share and wage share sums to around £55 billion. That is, if both the labour share and wage share had been unchanged over the period, employees would have received salaries of £2,200 more a year on average in 2010.

2.3 The share of wages going to the bottom half

Finally, we turn to the third element in the distribution of the value generated by the economy; the way in which wages are distributed between workers. While the two factors considered above – *labour share* and *wage share* – relate to the share of GVA flowing to *all* workers (the total wage pie), here we are interested in trends in the share of that wage pie that accrues to the bottom half of earners.

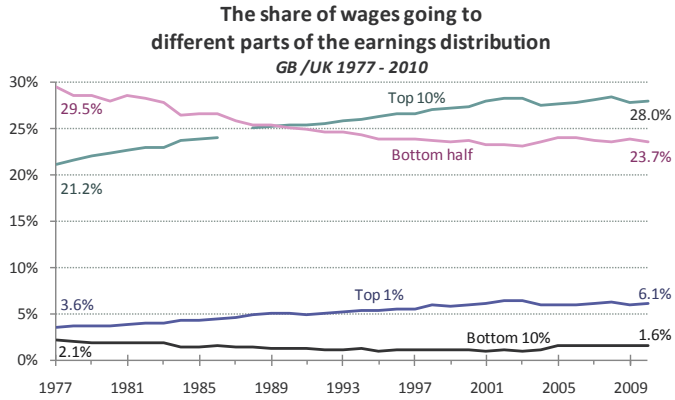


Figure 8: Earnings share by percentile group in earnings distribution: GB/UK 1977-2010

Note: Based on weekly wages among all employees – i.e. full-time and part-time. Figures cover GB pre-1997 and UK thereafter.

Source: ONS, *ASHE*

Figure 8 outlines the earnings shares accounted for by different sections of the earnings distribution. It shows that the share among workers in the bottom half of the earnings distribution fell from 30 per cent in 1977 to 24 per cent in 2010. Over the same period, the top 10 per cent of earners increased their share of the total wage bill from 21 per cent to 28 per cent.

A similar story is evident at the extremes of the distribution. The top 1 per cent of earners experienced an increase in share from 3.6 per cent to 6.1 per cent; conversely, the share of wages going to the bottom 10 per cent of earners declined from 2.1 per cent to 1.6 per cent.

Capturing bonus payments

As Figure 8 shows, the highest earners have been taking an increasingly larger share of the wage pot in recent decades. However, as we set out in Chapter 1 in the case of overall GVA, these distributional figures are likely to (increasingly) understate the true level of wage dispersion in the economy. That is because they are based on weekly earnings rather than annual, and therefore do not fully capture the impact of incentive payments.

As in Chapter 1, while we do not have annual data for the same time period shown in Figure 8, we can present findings on this basis for 1999-2008, as detailed in Figure 9.

In comparison to the weekly data presented in Figure 8 (and as dotted lines here), once bonuses are included, the overall share of earnings gained by the top 10 per cent and top 1 per cent was higher. For example, while the share of *weekly* earnings accrued by the top 1 per cent varied between 5.8 and 6.1 per cent over the period 1999-2008, the share of *annual* earnings going to this group varied between 8 and 9.4 per cent.

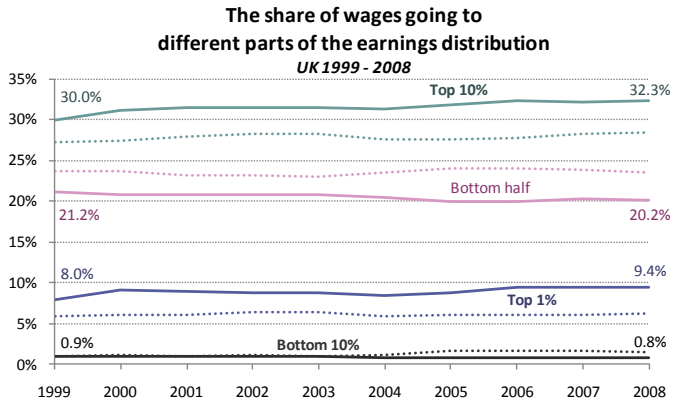


Figure 9: Differences in wage shares by earnings percentile groups calculated using annual and weekly earnings data: UK 1999 - 2008

Note: Solid lines based on annual wages among all employees – i.e. full-time and part-time. Dotted lines based on weekly wages. Data labels refer to annual figures only.

Source: ONS, *ASHE*

Trends over time are also different when looked at inclusive of bonus payments.

On the basis of annual data, the share of earnings gained by the bottom 10 per cent did *not* increase between 2005 and 2008, in contrast to the data on weekly earnings; similarly, the share of wages gained by the top 10 per cent of earners did *not* fall between 2002 and 2004, as it did on the weekly measure; and the share of earnings going to the top 1 per cent *rose* between 2002 and 2008 in terms of annual earnings, but fell in relation to weekly earnings.

This last finding highlights the growing importance over the last decade of incentive or bonus payments to final wages at the top of the distribution. As in the case of overall GVA, which we looked at above, once bonus payments are included, the story of wage inequality in the last ten years changes quite dramatically.

2.4 Quantifying the importance of each factor

In sum then, each of the three factors discussed above has contributed to the declining share of GVA that has accrued to workers in the bottom half of the distribution in the form of wages in the past 30 years. In doing so, they each help to explain why the pay of ordinary workers has increasingly failed to track the overall performance of the UK economy.

Figure 10 breaks down the changes in GVA shares experienced by different sections of the earnings distribution set out in Figure 2, specifying the precise contributions made by each of the three trends we have considered.

We noted at that point that, for every £100 of value generated in the UK economy in 1977, £16 was distributed to members of the bottom half of the earnings distribution in the form of wages, but that by 2010 this share had fallen to just £12. This equates to a 26 per cent fall.

The first section of Figure 10 shows that, of this overall 26 per cent fall among low-to-middle income workers: 3 percentage points were contributed by the decline in the labour share; 4 percentage points by the falling wage share; and 18 percentage points by growing wage inequality.[22]

The second section presents these contributions as proportions. It shows that **14 per cent of the decline in GVA share experienced by members of the bottom half of the earnings distribution was accounted for by the falling labour share; 16 per cent was due to the drop in wage share; and 70 per cent flowed from growth in wage inequality**.

[22] Totals do not sum due to rounding.

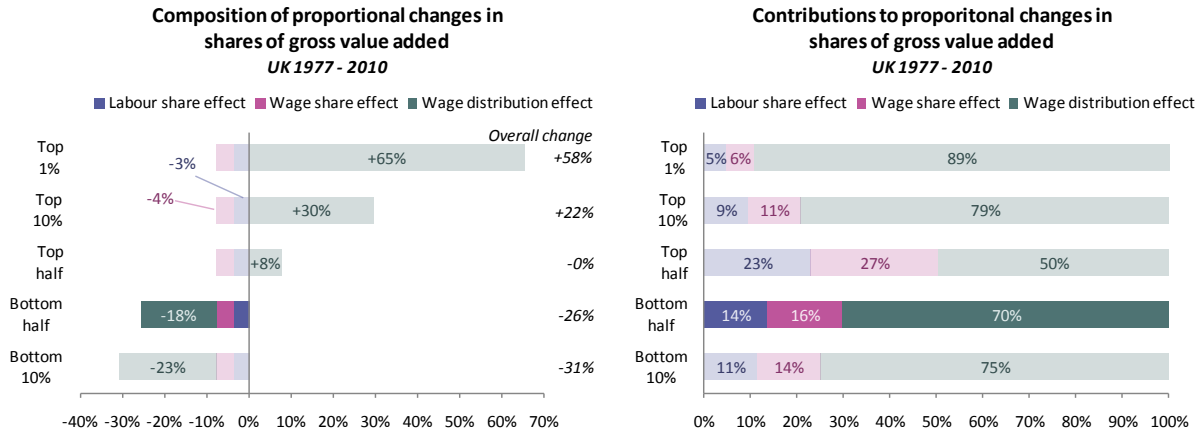


Figure 10: Contributions to changes in GVA shares accounted for by different sections of the earnings distribution: UK 1977-2010

Notes: 'Wage distribution effect' based on weekly wages among all employees – i.e. full-time and part-time. 'Contribution' proportions are based on overall magnitude of changes rather than the balance. For example, for the top 1% group, the per cent change in GVA share accounted for by the wage distribution effect (65%) is divided by the positive sum of all three effects (i.e. 65% *plus* 3% *plus* 4%), rather than the overall change figure of +58 per cent, producing a contribution figure of 89 per cent.

Sources: OECD, Stat; RF analysis of ONS, *ASHE*

Because the labour share and wage share effects relate to the total size of the wage pie, they had the same effect across all members of the earnings distribution. That is, they produced a combined negative impact of 7 percentage points on the GVA share accounted for by all workers. This can be seen in the consistent size of the pink and blue bars in the first of the two charts. In other words, in terms of their *pay*, all employees lost out to the same (relative) degree from the decline in the labour share and the decline in the wage share over the period.

The same is not true for changes in the distribution of wages, which affected workers differently across the earnings distribution. More specifically, changes in the wage distribution were positive for workers in the top half of the distribution and negative for those in the bottom half. That is, wage inequality counteracted the shrinking pot of wages for higher earners, but accentuated it for the lower paid.

The impact of rising wage inequality is greatest at the extremes of the earnings distribution. In the bottom 10 per cent of the earnings distribution, growing wage inequality produced a negative effect on the GVA share of the group of 23 percentage points, representing three-quarters of the overall decline of 31 per cent. In contrast, in the top 1 per cent of the earnings distribution, growing wage inequality produced a *positive* effect of 65 percentage points, more than counteracting the negative effects of the decline in labour share and wage share, and contributing to the overall increase in GVA share of 53 per cent experienced by the group.

2.5 Trends within the 30 year period

The analysis above relates to the period 1977-2010. Clearly, within this 30 year period, we can recognise variations in the main trends we have identified. Most obviously, Figure 2 shows that the majority of the decline in the share of GVA accounted for workers in the bottom half of the earnings distribution took place during the first half of the period. From the mid-1990s onwards their share remained relatively flat. Although the picture looks less stable when we more accurately capture

bonus payments (Section 1.3), the pace of decline is still somewhat slower than that recorded during the late-1970s and 1980s.

This finding reflects the literature on wages and, more broadly, income inequality over this timeframe.[23] It also chimes with the findings we present on the distribution of earnings at the household level in Section A1 of the Technical Appendix. While there may be some merit in repeating the analysis set out in the above sections for a range of different timeframes within the overall period, here we limit ourselves to this most obvious division, taking 1996 as the crossover year.

We find that, while the share of GVA flowing to the bottom half of earners declined from 16 per cent to 12 per cent over the period as a whole, between 1996 and 2010, the proportion remained unchanged. In part this is because of the counter-cyclical movement of the labour share in the last two years – if we instead compare 1996 with 2008, the GVA share of ordinary workers *does* decline slightly – but it primarily reflects the slowing pace of wage inequality over these years.

Figure 11 repeats the decomposition undertaken in Figure 10, and shows that the lack of change in the GVA share of the bottom half between 1996 and 2010 was the result of an upward pressure associated with increasing labour share (+6 percentage points) that was precisely offset by a downward pressure related to a significant reduction in wage share (-5 percentage points) and a smaller increase in wage inequality (-1 percentage points).

As a result, while the wage distribution effect explains 70 per cent of the overall decline in the share of GVA accounted for by the bottom half for the 30 year period, between 1996 and 2010 it was responsible for just 8 per cent of the outcome experienced by the group. Instead, increasing labour share (50 per cent contribution) and falling wage share (42 per cent) proved much more influential.

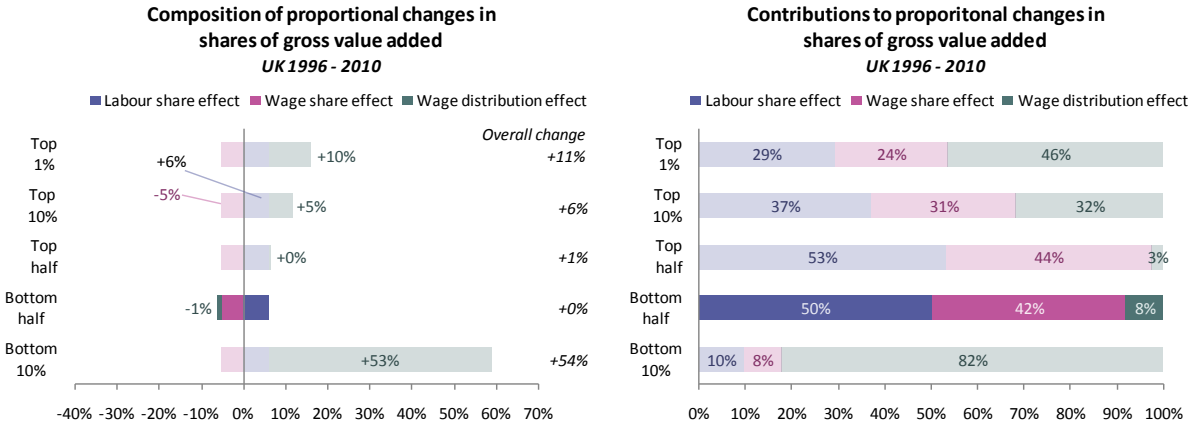


Figure 11: Contributions to changes in GVA share accounted for by different sections of the earnings distribution: UK 1996-2010

Sources: OECD, Stat; RF analysis of ONS, *ASHE*

[23] For example, see Machin, Stephen and Van Reenen, John, 'Changes in Wage Inequality', Special Paper No. 18, Centre for Economic Performance, London School of Economics, 2007 and Brewer, Mike, Muriel, Alastair, Wren-Lewis, Liam, 'Accounting for changes in inequality since 1968: decomposition analyses for Great Britain', Government Equalities Office, 2009

3 What has changed in the UK economy to account for these trends?

*More than two-thirds of the decline in UK **labour share** between 1977 and 2010 is explained by the shift in the UK economic structure, away from* industry *(mainly* manufacturing*) – in which a relatively high proportion of value flows to labour – and towards* finance – in which a much higher proportion of value accrues as profits.

*By contrast, trends in **wage share** over the period were almost identical across all sectors. The overall decline was therefore the result of changes in government policy rather than shifts in the UK's industrial structure.*

*Finally, in the case of **wage distribution**, economy-wide trends affecting all sectors proved most influential, explaining three-quarters of the headline level increase between 1975 and 1999, and more than four-fifths of the movement in the last decade. Changes in the UK's industrial structure played an increasing – though still secondary – role over the course of the 2000s. In this period, wage inequality was primarily driven by the* finance *sector.*

The analysis in the previous chapter quantified the contribution of three different factors to the declining share of wages in the bottom half: falling labour share of income, falling wage share of labour compensation and growing wage inequality. This chapter seeks to explain these trends. It asks: how have changes in these three factors played out across the UK economy? In particular, we consider two routes by which trends at the sector level might have affected the national level distribution of GVA:

- First, changes that have taken place in all sectors – or at least in those that are most important to the UK economy. For example, returns to skills might have changed, driving up the wage premium associated with having a degree across all industries; alternatively, inequality might have increased significantly in the three largest sectors. We refer to these as *within-sector* effects.
- Secondly, the industrial structure of the UK might have changed. For example, a particularly unequal sector might have grown in size; alternatively, the economy might have shifted towards sectors with low labour share and away from sectors with high labour share. We refer to these as *between-sector* effects.

In this section we quantify the relative importance of these two explanations. We also determine which sectors have been the most influential in the trends identified in Chapter 2. We proceed by taking each of the factors in turn: first the labour share.

3.1 Labour share at the sector level

Chapter 2 showed that the labour share contributed 14 per cent of the decline in GVA going to the wages of bottom half workers. To what extent have trends in the labour share been due to changes in the UK industrial structure as opposed to more general factors affecting all sectors?

Figure 12 looks at how the industrial structure of the UK economy has changed over time. It details changes in the contribution of each broad sector of the economy to overall GVA in the period 1977-2010.[24] It highlights the growing importance of *finance*, the consistently high weight given to the *retail* and *other services*[25] sectors and the falling share of *industry*.

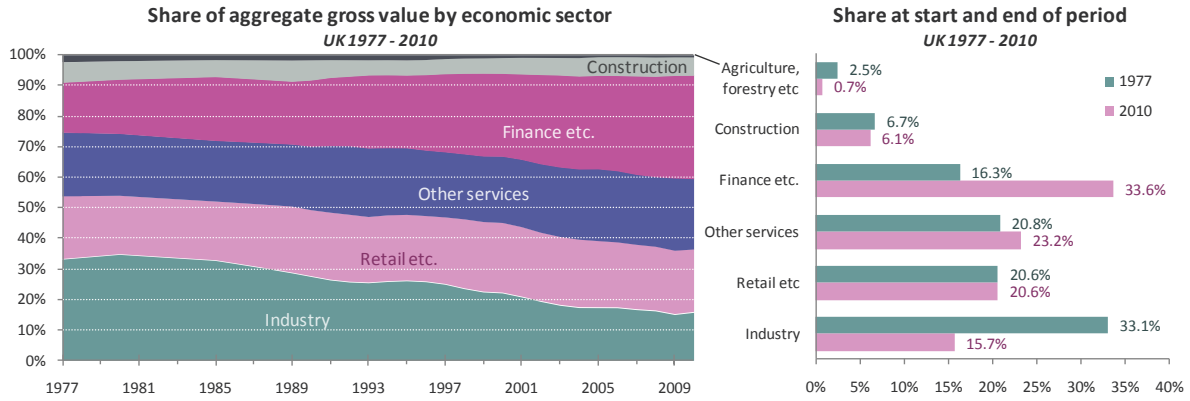


Figure 12: Sector contributions to total GVA at factor cost: UK 1977-2010

Notes: Shares calculated on the basis of expenditure-based GDP method. Value of each sector is shown as a proportion of total gross value added in all sectors. Figures are at factor cost rather than basic prices to reflect the fact that labour share data is calculated by dividing compensation of employees by GVA at factor cost. Sectors are comprised as follows. **Agriculture etc**: agriculture, forestry, fishing and hunting; **Construction**: construction; **Other services**: education, health and public administration; **Finance etc**: finance, real estate, computers and other business activity; **Retail etc**: wholesale and retail trade, repair of motor vehicles, hotels, restaurants, transport, storage and communications; and **Industry**: mining, manufacturing and energy.

Source: OECD, Stat

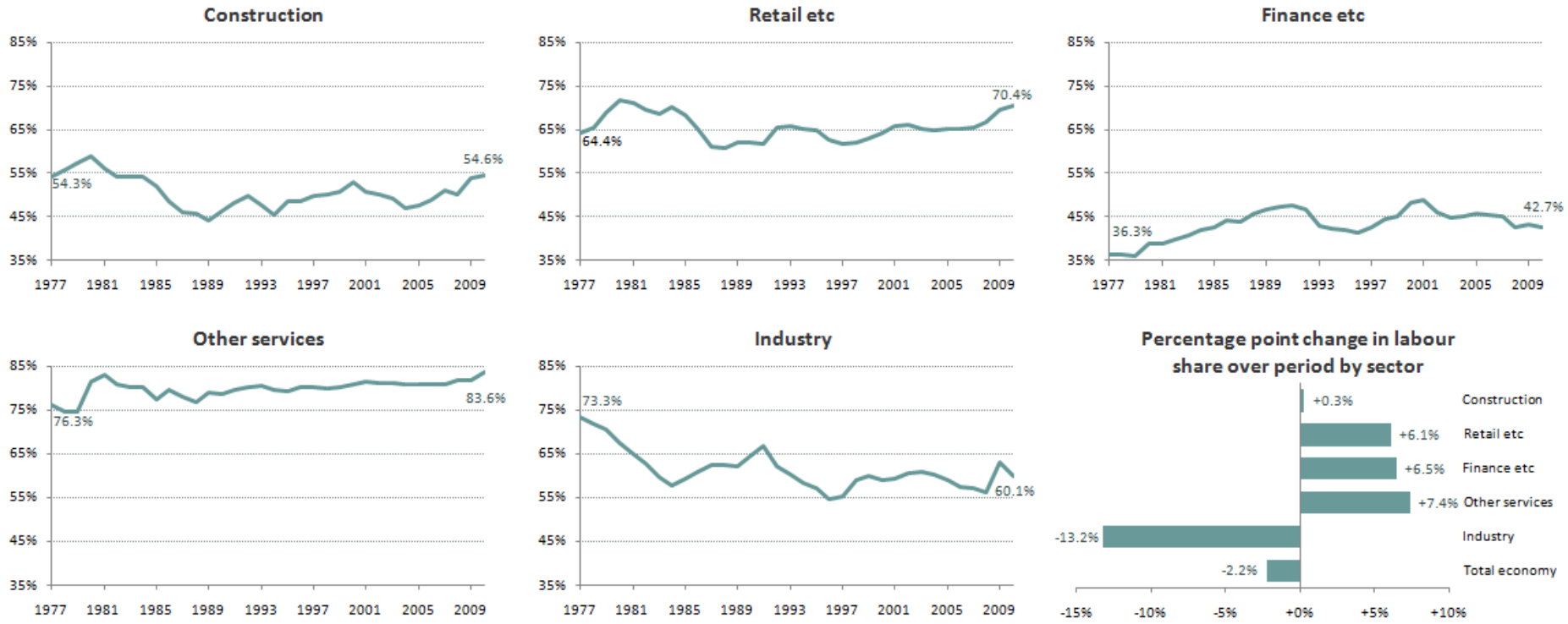
What, then, has happened to the labour share *within* sectors?[26] Figure 13 provides details for the same set of sectors covered in Figure 12. We can see that, compared to the national labour share figure – which moved between 64 per cent and 61 per cent over the period – *construction* and *finance* recorded *below*-average labour shares, while *retail*, *industry* and especially *other services* all recorded *above*-average shares.

[24] The sectors detailed here are deliberately broad, reflecting the level at which labour share data is available. Analysis elsewhere in this chapter focuses on more detailed sectors.

[25] As noted in footnote 7, GVA in the public sector is almost entirely based on compensation of employees. Therefore, changes over time in the contribution to overall GVA made by the *other services* sector, where many public sector workers are located, will have a disproportionate impact on labour share at the aggregate level. However, while certain industries within the public sector expanded over the period (education and health for example), Figure 12 makes clear that the overall increase in the *other services* sector was relatively modest, suggesting that any associated distortion is limited.

[26] Again, as with the overall figure, the initial labour share in each sector can be adjusted to take account of self-employment. Our focus on employees means that we only consider the unadjusted data here, but adjusted figures are presented in Section A3 of the Technical Appendix.

Figure 13: Labour share of income in selected economic sectors: UK 1977-2010



Notes: Data divides total compensation of employees in each sector (wages and salaries in cash and in-kind, plus social contributions made by employers) by gross value added in the sector at factor cost. Sectors are broken down as following. **Construction**: construction; **Retail etc**: wholesale and retail trade, repair of motor vehicles, hotels, restaurants, transport, storage and communications; **Finance etc**: finance, real estate, computers and other business activity; **Industry**: mining, manufacturing and energy; **Other services**: education, health and public administration. Not shown here, but included in the total economy figures, is **Agriculture etc**: agriculture, forestry, fishing & hunting. The OECD uses an adjustment mechanism to remove 'ownership of dwellings' from the GVA attributed to the *finance* sector, because there are no employees involved in this output (it captures the provision of housing services by the owner of a property to its occupants, irrespective of whether the owner is also the occupant). However, this element *is* included in total econmy labour share figures. Therefore, the disaggregated sector data published by the OECD does not directly map onto the total economy data. To avoid this outcome (which complicates the sectoral decomposition undertaken in the Technical Appendix), we present *finance* here *inclusive* of the ownership of dwellings element. This inclusion has the effect of reducing the labour share recorded in the sector relative to the published OECD figures. However, it has no effect on any other analysis in this paper.

Sources: OECD Stat; ONS, *National Accounts*

Labour share fell significantly over the period in *industry*, from 73 per cent to 60 per cent, but rose in every other sector shown. However, despite a number of relatively large movements in share over the period at the sector level, the change registered at the aggregate level was small (-2.2 percentage points).

Sectoral decomposition

In order to quantify the relative importance of the industrial sector and of more general trends we need a statistical method that can 'decompose' national trends in the labour share into the impacts of these two trends. We have followed the decomposition methodology used in the IFS' annual *Poverty and Inequality in Britain* publication.[27] We focus on the same set of sectors considered above, using the labour share and contribution to GVA figures for the period 1977-2010.[28]

Based on our calculations, movements in labour shares within sectors had a small *positive* impact on the overall picture, while shifts between sectors had a larger *negative* effect. Overall, the findings show that the decline in overall labour share was largely a function of the changing industrial structure of the UK rather than of trends within sectors.

More specifically, a large fall in labour share in the *industry* sector was more than offset by modest increases in the *retail*, *finance* and *other services* sectors, producing a positive contribution to the aggregate labour share figure. In other words, these trends in the labour share *within* different sectors partially cancelled each other out.

By contrast, the dramatic shift in the industrial structure of the UK from *industry*, where a relatively large proportion of value generated flows to labour, to *finance*, where a much higher proportion of value is retained as profits, produced a strong negative effect. These *between*-sector effects accounted for two-thirds (70 per cent) of the movement in UK labour share.

Finally, if we take both of these effects together, by far the most influential sectors on the change in labour share were *industry* (which contributed 52 per cent to the aggregate outcome), *finance* (30 per cent) and *other services* (12 per cent).

3.2 Wage share at the sector level

We now turn to the second of our three explanatory factors: the wage share. As was shown in Figure 7, the proportion of total employee compensation accounted for by non-salary sources such as employer social contributions increased by 4 percentage points in the UK over the period 1977-2010 (from 13.5 per cent to 17.3 per cent). This means that the share being paid as wages and salaries fell. This fall drove 16 per cent of the overall decline in the share of value going to the wages of lower half workers.

How has this played out in different sectors? Unlike the trends in labour share discussed above, the pattern of decline across sectors was identical. This points firmly to the conclusion that shifts in the economic composition of the UK economy had zero effect on this phenomenon. Instead, what appears to have driven the change across the economy is movements in employer NICs rates, with alterations in the wage share tending to coincide with rises and falls in the main rate.

[27] See the 2006 report for a full explanation.
[28] See Section A4 in the Technical Appendix for detailed methodology and results.

For example, the increase in non-salary share of labour compensation in the 1970s coincided with reform of NICs in the mid-1970s and a subsequent steady increase in the main employer rate to 10.45 per cent by 1983. Similarly, the slight decline in non-salary share in the 1980s and 1990s tracked reductions in employer rates for lower paid staff, while the increase in non-salary share observed in the 2000s is likely to have been caused by new increases in the employer rate, with employers now paying 13.8 per cent for all employees above the secondary threshold. These trends are clearly not a feature of the UK's changing industrial structure but of policy changes by government.

3.3 Wage distribution at the sector level

We now turn to the third factor underpinning the shares of GVA experienced by different groups of workers: trends in wage distribution. Chapter 2 showed that growth in wage inequality was *by far* the most important factor in the declining share of GVA accruing to the bottom half of workers in the form of wages between 1977 and 2010 (although much less during in the period since the mid-1990s).

Again, we are particularly interested in whether within-sector effects offer the best account of this change, or whether we can instead point to the impact of between-sector effects resulting from the changing sector make-up of the UK economy. We are also interested in the relative contributions of different sectors; for example, how much did *finance* contribute to overall increases in wage-inequality?

A period of detachment

As already discussed in this paper (and highlighted in Figure 8 and Figure 9), wage inequality at the headline level grew most rapidly during the first part of the 30 year period we have considered, changing somewhat in nature in more recent years. During periods of significant growth in wage dispersion in the 1980s and early-1990s, inequality grew across the earnings distribution in the form of a 'fanning out' of wages at all levels. In these years, the top moved further away from the middle, which in turn moved further away from the bottom. By contrast, since the mid-1990s, as growth in overall inequality began to slow, trends in inequality split in two. While the ratio of top-to-middle earnings continued to grow, the ratio of middle-to-bottom earnings levelled out. What had formerly been a 'fanning out' of all wages became better characterised as a 'detachment' of the top from the rest.

We focus here on the most recent decade: the period of detachment. This is in part because of data availability, but is also informed by recent research in this area. In particular, Prasad has previously identified that three-quarters of the growth in wage inequality in the UK that took place between 1975 and 1999 was due to *within*-sector effects. While he noted that the *trade/services* sector[29] made the biggest overall contribution, he identified strong growth in pay dispersion across *all* sectors. His findings suggest therefore that the changing structure of the UK economy had only limited influence on wage inequality during its period of most rapid growth.[30]

[29] He considered four broad sectors in total: *manufacturing*; *construction, utilities & transport*; *trade/services*; and *public administration*.

[30] Prasad, Eswar, IMF Working Paper, *Wage Inequality in the United Kingdom 1975 – 1999*, 2001

In considering the more recent period, we note the work undertaken by Bell and Van Reenen, which suggests that the development of the *financial services* sector explains much of the detachment that took place in the last decade. More specifically, the authors found that the increased share of wages going to the very highest earners (in all sectors) occurred primarily because of growth in incentive payments; more than 60 per cent of which was accounted for by bonus payments in the *finance* sector.[31]

Wage and employment trends at the sector level

In order to determine the relative importance of different sectors to the overall trend during this period of detachment, and the influence of within- and between-sector effects, we need to first understand what has been happening in relation to wages at this level. In particular, we are interested in three measures that help determine wage inequality within and across industries:

- The way in which wages are distributed in the sector, and how that distribution has changed over time;
- The level of average (mean[32]) wages in the sector, and how that level has changed over time;
- The size of that sector in terms of its share of wages in the overall UK economy, and how the sector has grown or shrunk over time.

We now look at each of these factors in turn.[33]

Wage distributions within sectors

Turning first to changes in the wage distribution within sectors, Figure 14 sets out wage dispersion ratios in the period 1999-2008 in the eight industrial sectors that provide the most jobs in the UK and/or the highest proportions of jobs for people in the bottom half of earners. The 90-10 ratio shows how the pay (including bonuses) of workers at the 90th percentile compares to that of workers at the 10th: the higher the ratio, the more unequal is the pay distribution between top and bottom. Similarly, the 90-50 ratio compares workers at the top with workers in the middle, while the 50-10 ratio compares those in the middle with those at the bottom. Figure 15 provides a summary of the ratios at the start and end of the period.[34]

These charts show that between 1999 and 2008 rates of inequality on all measures (90-10, 90-50 and 50-10 ratios) remained more or less static in all but two sectors: *construction* and *finance*. The 90-10 ratio in the *construction* sector rose steadily over the period from 2004 to 2008. However, it started from a relatively low position and its 2008 position remained lower than in most of the other sectors shown.

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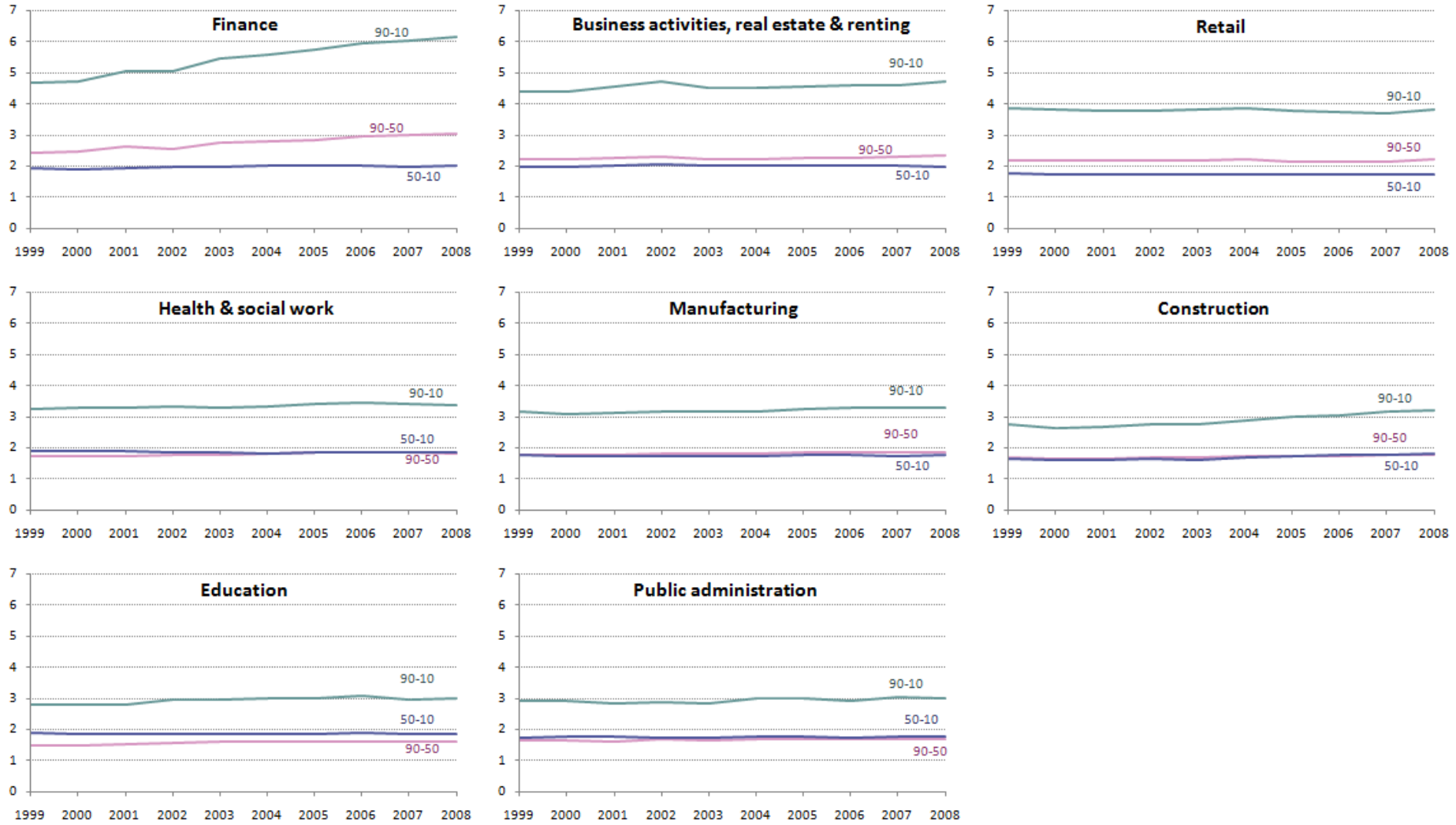
[31] Bell, Brian and Van Reenen, John, 'Bankers' pay and extreme wage inequality in the UK', Centre for Economic Performance, London School of Economics, 2010

[32] We focus on the mean in this analysis (rather than the median) because it allows us – statistically – to measure the contribution of each sector to overall trends in wage inequality.

[33] In this section we focus on a more detailed set of sectors than the ones outlined in Section 3.1. Specifically, we use the 2003 Standard Industrial Classification (SIC 2003) sectors. A more recent, and more detailed still, SIC 2007 is available, but we use the earlier definition because it provides consistent coding in the ASHE dataset that underpins much of the analysis here.

[34] Although not covered in this paper, there are various reasons why pay differentials within sectors have become so influential in our understanding of inequality. Increasing returns to education and changes in the structure of the labour market are most often noted as the key factors, with labour market polarisation particularly influential in the period up to around 2002 and the bursting of the first dotcom bubble.

Figure 14: Wage dispersion by economic sector: UK 1999-2008



Note: Ratios relate to annual earnings among full-time employees only.
Source: RF analysis of ONS, *ASHE*

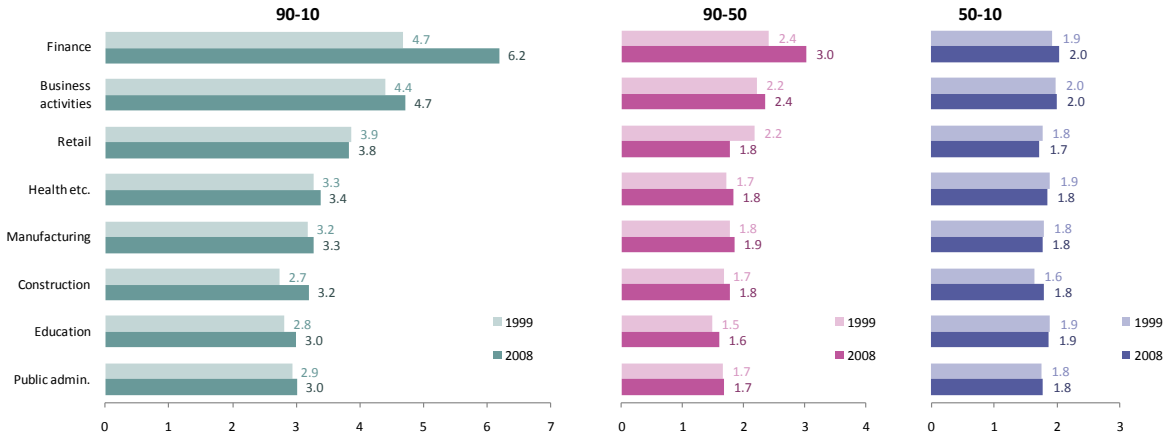


Figure 15: Wage dispersion by economic sector: UK 1999 & 2008
Note: Ratios relate to annual earnings among full-time employees only. Sectors refer to SIC 2003 groupings.
Source: RF analysis of ONS, *ASHE*

More striking though, is the trend in *finance*, in contrast to the other industries considered, inequality in this sector continued to rise during the last decade. In 1999, the 90-10 ratio in finance was 6 per cent higher than the ratio in the second most unequal sector (*business activities, real estate & renting*[35]); by 2008, the gap had increased to 31 per cent. Over the same period, the gap between the 90-10 ratio in *finance* and the *least* unequal sector (*public administration*) increased from 60 per cent to 106 per cent.

It is also worth noting, in line with the findings of Bell and Van Reenen, that the highest earners in *finance* moved ever further away not just from the lowest earners, but also from the middle (as evidenced by the 90-50 ratio). In contrast, the difference between the middle and the bottom (50-10 ratio) remained largely unchanged over the period.

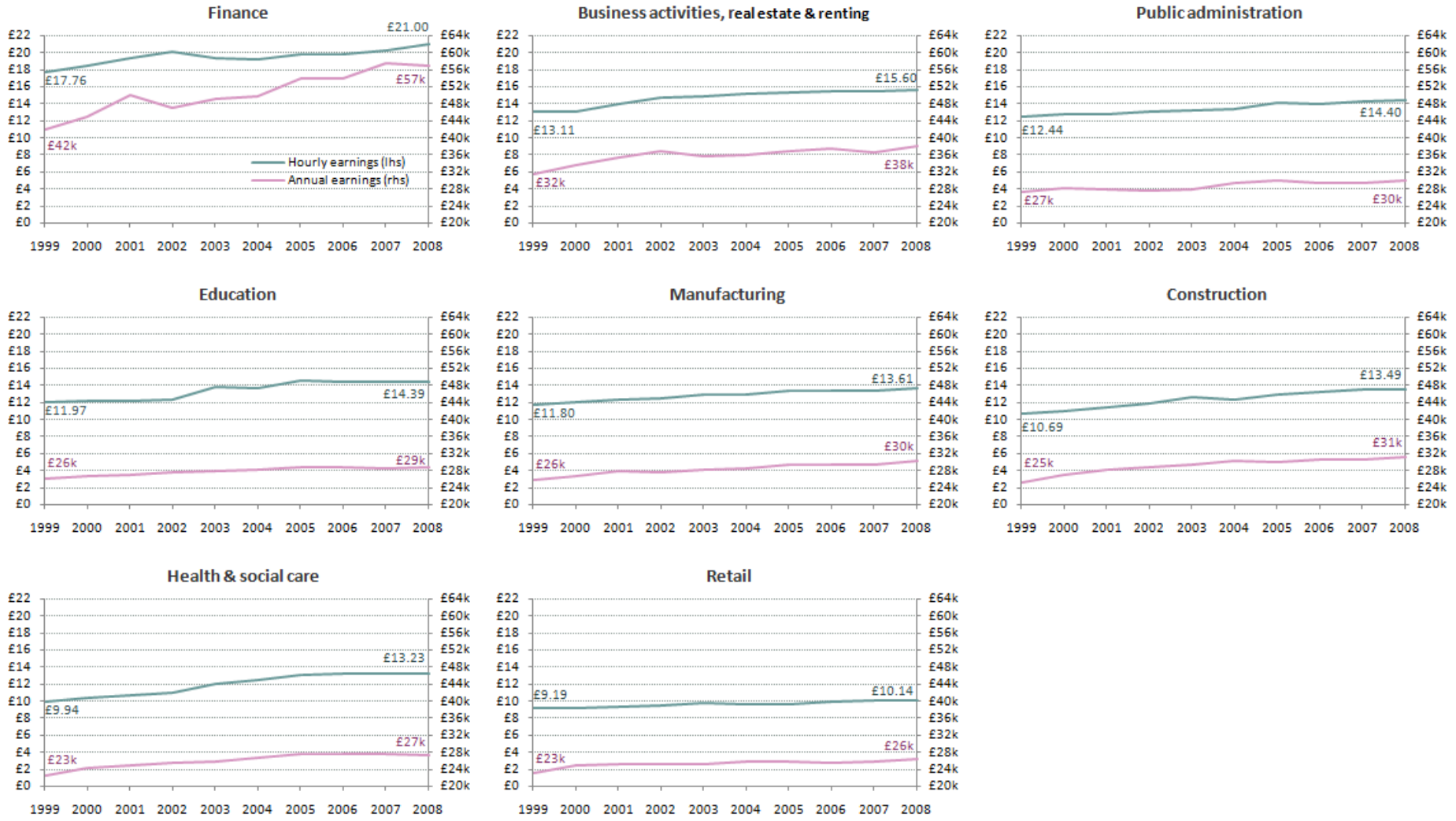
Mean earnings within sectors

Having discussed the first of the three factors that influence wage inequality at the aggregate level, wage dispersion, we next turn to average pay. Figure 16 sets out trends in average hourly and annual[36] wages by sector and Figure 17 details average annual growth rates over the period.

In general, trends in earnings in each sector reflect the national picture that we have set out in recent reports; namely, year-on-year increases in the real value of wages up until around 2003, followed by stagnation in the period 2003 to 2008, despite strong economic growth.

[35] Under SIC 2003, this sector is referred to as *real estate, renting & business activities*. Here we reverse the order of the title and subsequently use *business activities* as a more appropriate shorthand for the types of industries – legal practitioners, accountants, software companies, management consultants etc – covered.
[36] The data for this analysis is again taken from ASHE. We use both the hourly and annual wage data to calculate trends in inequality. Each measure has distinct advantages. The hourly wage allows us to include both part- and full-time workers together which is more representative of the true composition of the labour market. On the other hand, as we have noted elsewhere, annual earnings are the best indicator for capturing extreme wage inequality because of the inclusion of incentive payments.

Figure 16: Real average earnings by sector: UK 1999-2008



Notes: Hourly data covers all employees - i.e. full-time and part-time. Annual data covers full-time only. Figures adjusted using GDP deflator.
Source: ONS, *ASHE*

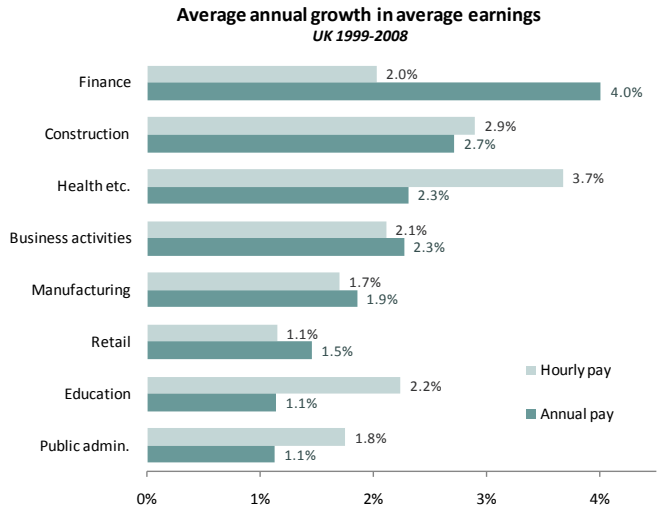


Figure 17: Average annual growth in hourly and annual pay by economic sector: UK 1999-2008

Notes: Hourly data covers all employees – i.e. full-time and part-time. Annual data covers full-time only. Figures adjusted using GDP deflator.

Source: ONS, *ASHE*

One notable exception to this rule is the *retail* sector, which has undergone a longer period of stagnation in the value of real wages, with wages broadly flat over the entire period from 1999 to 2008. For example, whereas real hourly-wage growth in most sectors fluctuated between around two and three per cent over the decade, average earnings in retail jobs grew by an annual average of just one per cent.

This is of particular importance to our wage story, because the retail industry is the second largest sector in the UK in terms of employment share and provides more jobs for people in low-to-middle income households than any other.

The other notable sector is *finance*. In addition to recording average wages that were far higher than in any other industry, pay continued to rise in the second half of the period, meaning that the sector average moved further away from others over time. This trend is particularly stark when measured on an annual basis. Indeed, it is interesting to note that annual wages in finance significantly outperformed hourly wages – far more so than in any other sector.[37]

Contributions to total employment and wages

Finally, Figure 18 looks at the third part of this story, detailing changes in the size of different sectors in terms of employment and wages for the period 1999 to 2008. As can be seen by the variation in the pink and green bars, a focus on employment or wages has slightly different implications.

In relation to employment, the decline in *manufacturing* is particularly striking. In just ten years from 1999 to 2008, the sector fell from being the largest employer in the UK, providing 19 per cent of all jobs, to being the fifth largest, providing just 12 per cent of all employment).

Contrary to popular belief, despite a significant increase in its share of GVA (as outlined in Figure 12), the share of *employment* accounted for by the *finance* sector did not grow in the period from 1999 to 2008. In fact, the sector's share of overall employment *fell* by 0.5 percentage points over the period.

By contrast, the *business activities* sector experienced significant growth in its share of employment of 3.2 percentage points. As a result, it was the third largest employer in the UK at the end of the period, accounting for 14 per cent of all jobs in the economy. Other sectors which experienced large

[37] It is important to note that in neither of these cases – *retail* or *finance* – are we talking about a static pool of workers. Average wage trends do not simply represent the same employees being paid more or less over time, but may also be the result of the changing composition within sectors. They therefore do not represent a simple like-for-like comparison in terms of the wage performance actually experienced by employees.

increases in shares of total employment include *education* and *construction*. Smaller rises were recorded in *health & social work*[38] and *other community services*.

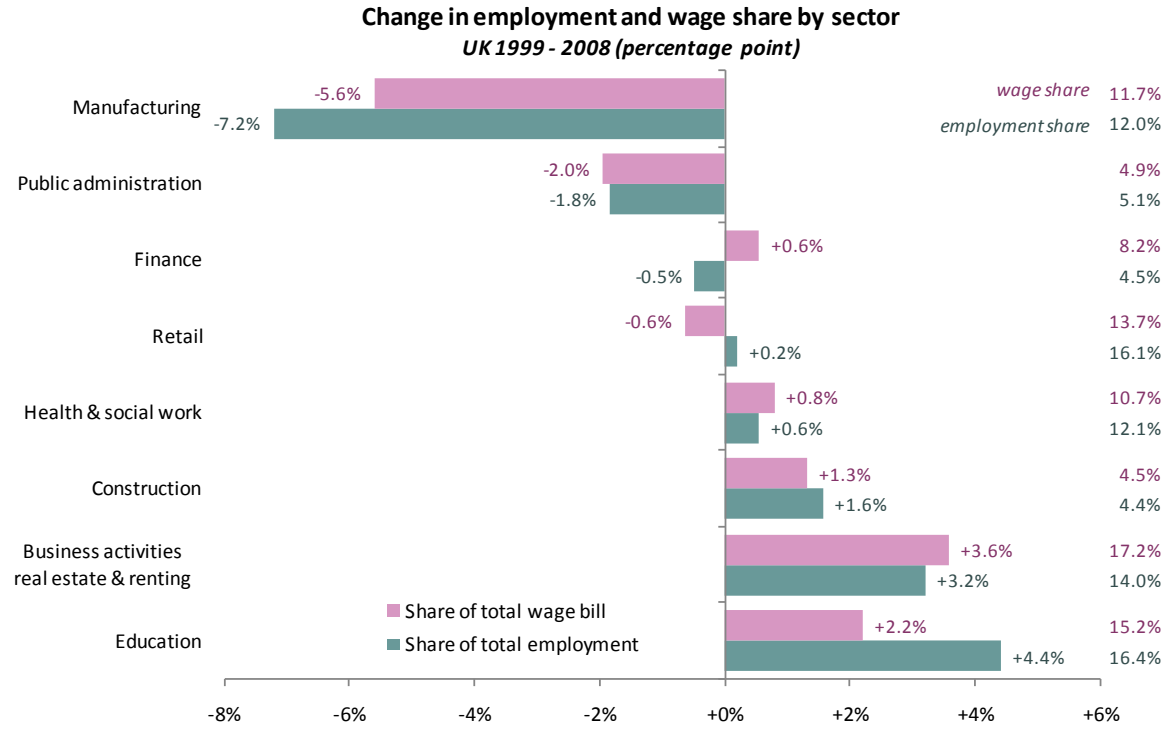


Figure 18: Changes in employment and wage share by selected sector: UK 1999-2008

Note: Shares calculated on the basis of jobs and total pay recorded across all sectors (including those not identified here) in the *Annual Survey of Hours and Earnings*.

Source: ONS, *ASHE*

As would be expected, trends in the overall share of wages in the UK economy are broadly in line with trends in the sector shares of employment. However, there were important instances where expanding employment did not translate into an increase in wage share.

In the *business activities* sector, employment expanded by 2.7 percentage points but the share of the national wage bill increased by a more significant 3.6 percentage points, implying that wages rose more quickly than employment. Likewise, the *finance* sector experienced above-average growth in earnings; this is reflected by the fact that, although employment share shrank, the sector's share of all wages increased: this is the only sector in which this took place.

By contrast, *retail* recorded the opposite trend; it is the only sector in which the share of wages fell despite growth in employment share. This effect highlights the below-average rate of growth of salaries in this sector over the period. In *education*, the change in employment share also increased by more than the share of wages, with employment rising by 3.3 percentage points between 1999 and 2008, but its share of wages growing by only 2.2 percentage points. This is likely to reflect the contribution made to the increase in employment by relatively low paid teaching assistants.

[38] This increase is smaller than some readers might expect and is a product of our use of the SIC 2003 groupings. For example, the SIC 2003 *Health & social work category* includes veterinarians, while the corresponding category in SIC 2007 focuses on human health only. Consideration of ONS figures on labour share over the same period show that *health &social work* did indeed increase its share by a more significant margin than recorded here. It is not possible to determine the precise magnitude of any effect on the sectoral decomposition results set out later in this chapter, because the SIC 2007 categories are not available on a consistent basis in ASHE over the time period analysed, but a major effect is unlikely.

Sectoral decomposition

Having set out trends over the last decade in the three factors that help explain the influence of different sectors on aggregate level wage inequality in the UK – wage dispersion, average wages and shares of total wages and employment – we can now undertake a statistical decomposition, using the *Theil Index*[39] as our base. This approach enables us to determine whether inequality in this period was primarily a product of *within*- or *between*-sector effects, and to establish which sectors were the most important drivers of these trends.

Within and between sector effects

As mentioned above, Prasad has considered the influence of between- and within-sector effects on wage inequality in some detail in relation to the period 1975-1999. He found that around three-quarters of the increase in headline inequality was due to general changes taking place within sectors, rather than changes in the UK's sectoral make-up (between-sector effects).[40]

We can expand this analysis by using the *Theil Index* to disaggregate national wage inequality in the UK in the period 1999-2008 into between- and within-sector portions.[41] Figure 19 details the results. It shows that, at a headline level, the overall index increased over the period, growing rapidly between 1999 and 2001, declining slightly to 2005 and rising steadily thereafter. This reflects an increase in wage inequality at the aggregate level over time.

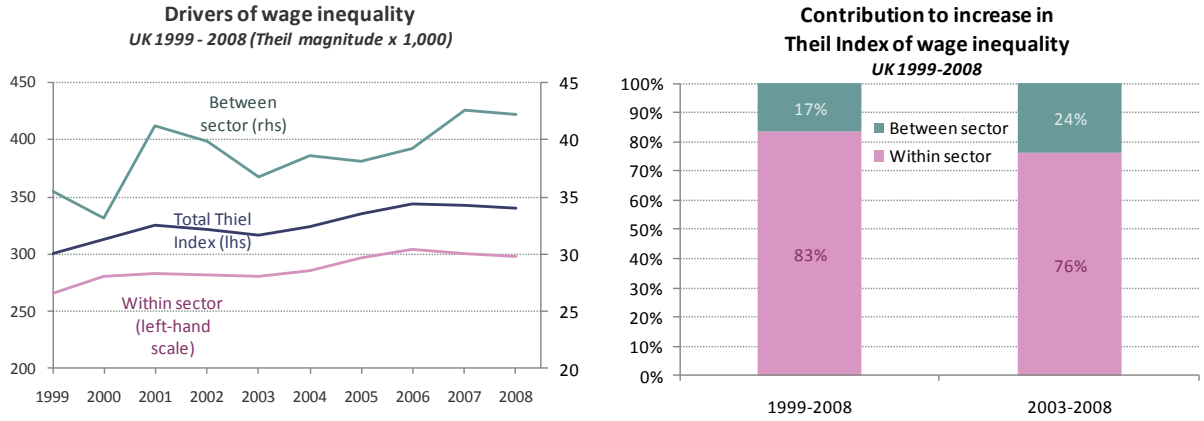


Figure 19: Theil decomposition of wage inequality: UK 1999-2008

Note: For legibility, the Theil elements measured in this analysis have been multiplied by 1,000 here.

Source: RF analysis of ONS, *ASHE*

Breaking the overall trend down, the second chart reveals that within-sector inequality accounted for around 83 per cent of the growth in total wage inequality between 1999 and 2008, slightly higher than recorded by Prasad in the earlier period. However, while between-sector effects continued to play a secondary role, their influence appeared to grow over the decade, helping to explain one-quarter (24 per cent) of the rise in the *Theil Index* between 2003 and 2008.

[39] *Theil's T statistic*, or the *Theil index*, is an established measure of inequality alongside others such as the more widely-used *Gini index*. However, unlike the *Theil index*, the *Gini index* cannot be decomposed to show the contribution different industrial sectors make to the overall level of inequality. More details are provided in Section A5 of the Technical Appendix.

[40] IMF Working Paper, *Wage Inequality in the United Kingdom 1975 – 1999*, 2002

[41] The Theil decomposition of inequality is not directly comparable with the residual inequality method used by Prasad. However, both are indicative of the trends in within and between sector inequalities over the respective time periods.

Sectoral contribution to within-sector effects

Within-sector wage inequality effects are determined by trends in wage dispersions across sectors and the weight given to those sectors. Consideration of Figure 14 appears to confirm Bell and Van Reenen's finding that the *finance* sector was a very important driver of the within-sector effect identified above (and, by implication given the dominance of the within-sector effect on the total, of overall wage inequality). That is, the massive increase in wage dispersion in the sector was one of the biggest factors in explaining growing within-sector inequality.

The *business activities* sector is likely to have played a more modest role, reflecting the gradual increase in the 90-10 ratio in this industry.

Sectoral contributions to between-sector effects

While the analysis above shows that changes in industrial structure (between-sector effects) played a limited role in driving aggregate level wage inequality in recent years (accounting for just one-sixth of the total in the period 1999-2008, and just one-quarter in the earlier period), the growing importance of the effect in the latter half of the 2000s, identified in Figure 19, merits a closer look.

Figure 20 considers the influence of different sectors on the growth in between-sector inequality for the period 1999 to 2008, drawing on data relating to average pay and to wage and employment shares in each sector. The first chart shows the contribution made by each sector to overall increases in between-sector earnings inequality, while the second chart shows the change in size of these contributions over the period. A number of conclusions can be drawn.

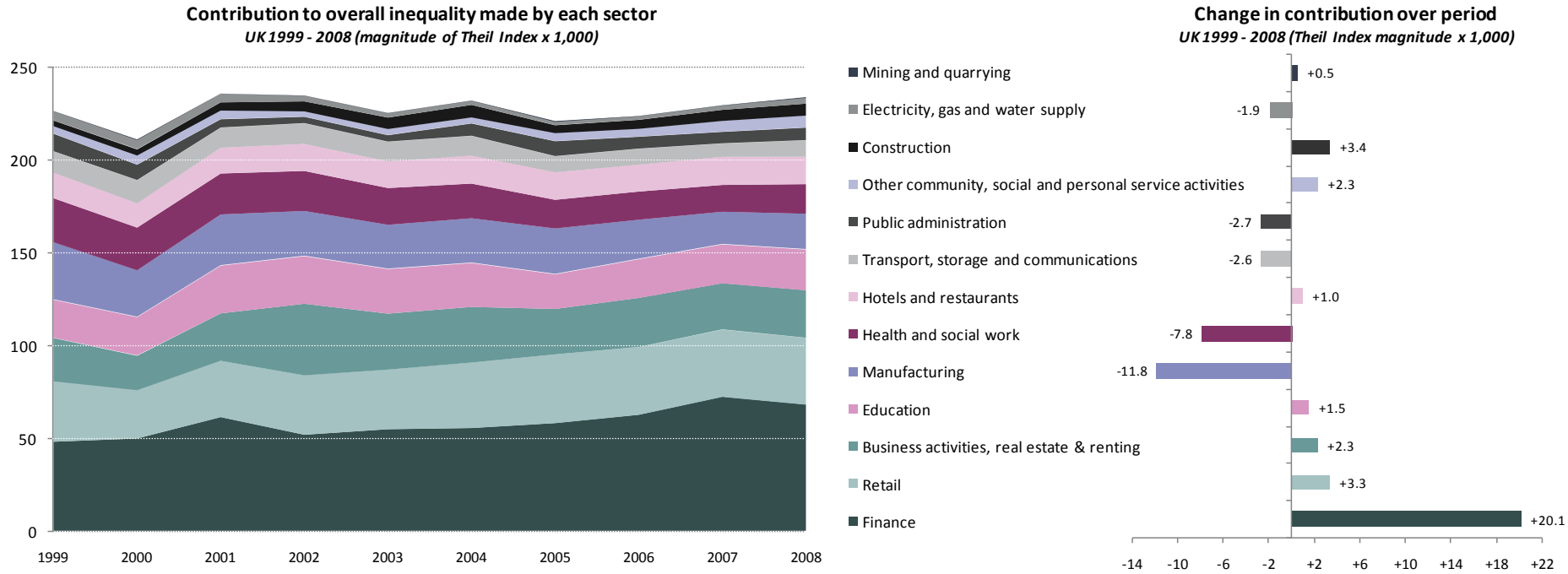
Throughout the period, the *finance, retail* and *business activities* sectors consistently provided the largest contributions to the overall trend. The contribution of *finance* increased particularly noticeably over the period, in contrast to sizeable reductions in contributions in both the *manufacturing* and *health & social work* sectors.

Consideration of Figure 18 suggests that the changing contributions of *manufacturing* and *business activities* can be explained by significant changes in their shares of both overall employment and pay. That is, *manufacturing*, where pay inequality is relatively low, declined in size; while the *business activities* sector, where pay inequality is much higher, increased in importance.

However, in relation to the other sectors mentioned above – *finance*, *retail* and *health & social work* – changing contributions had more to do with movements in average pay (and therefore share of the overall wage bill). That is, while none of these sectors experienced a particularly large increase or decrease in their share of employment, they all recorded movements in average pay that had significant effects at the aggregate level.

In the case of *finance*, above-average growth in pay pulled up overall inequality by increasing the distance of pay in this sector from the national average; in the case of *retail*, below-average growth in pay pulled the average down; and, in the case of *health & social work*, above-average increases in a relatively low-paid sector had the effect of *reducing* between-sector wage inequality.

Figure 20: Contributions to earnings inequality by sector: UK 1999-2008



Notes: The values for each sector presented in the chart above represent the *absolute* size of the contribution each industrial sector made to overall inequality (multiplied by 1,000). It is presented in this way for ease of interpretation. The raw Theil results for sectors can be both positive and negative, as zero represents equality and it is deviations from zero that contribute to overall inequality. In this case, the results for the following sectors were negative in most years: *other community and social services*, *hotels*, *education*, *health and social work*, and *retail*. See Section A5 of the Technical Appendix for the *Theil* results in their original format and a detailed discussion of the index.

Source: RF analysis of ONS, *ASHE*

Undoubtedly, the most striking aspect of Figure 20 is the extent to which the contribution made by the *finance* sector increased from 2003, suggesting that – just as in relation to within-sector wage inequality – it was the *finance* sector above all others which drove the growth in between-sector inequality over the period.

Explaining growing wage inequality

In summary, Chapter 2 showed us that wage inequality was by far the main contributor to the declining share of value generated in the UK economy going to the bottom half of earners in the form of wages over the period 1977-2010. The analysis in this chapter now tells us that pay trends *within* sectors were much more influential on headline wage inequality than any shift in the industrial structure of the economy.

Between 1975 and 1979, Prasad has previously shown that three-quarters of the growth in wage inequality was due to *within*-sector effects; in the period 1999-2008, we have found that an even higher proportion of the total movement (83 per cent) flows from within-sector effects. Much of this effect has occurred because of big increases in wage dispersion in the already highly unequal *finance* sector, along with more modest increases in the large *business activities* sector.

While explaining little of the overall movement over the ten years, *between*-sector wage inequality effects have become more important since 2003, with *finance* once again helping to drive the story. While a decline in the importance of the *manufacturing* sector and a growth in the size of *business activities* explain some of the recent increase in between-sector inequality, it is *finance* that is *the* outlying sector in terms of wage performance, with increases in average pay outstripping any experienced in other sectors.

3.4 The wider picture

In the above analysis, we have identified a significant decline in the share of value generated in the UK economy that has been accounted for by workers in the lower half of the earnings distribution over the past three decades, and we have observed that the primary driver of this effect has been growing wage inequality. While the trend has been much less marked since the mid-1990s, we have found that it has been a product of changes *within*, rather than between, sectors. That is, wage inequality has not grown because of shifts in the industrial structure of the UK economy, but has instead been a feature of all sectors. In this section we therefore consider some of the trends that might underpin these findings, and consider the extent to which the phenomenon may be an international one.

Underlying trends

A significant academic literature has attempted to assign causation for the UK's high level of wage inequality to a variety of factors. Here we review it briefly.

Much recent work has pointed to rising wage returns to education and skills as the key explanatory factor. Van Reenen outlines growing demand for skilled labour since the late 1970s, particularly in the case of workers with graduate and post-graduate education, with the same trend being evident

across OECD countries.[42] Van Reenen's focus (and that of most academics) is on the US, but Machin and McNally note that the same patterns can be seen in the UK.[43]

Advances in technology have also been suggested as important drivers of rising inequality. Such advances have not only helped to drive the increased returns to skills outlined above, but have also influenced the kinds of jobs that are created in today's economy. For example, Goos and Manning have highlighted that computers and automation have replaced many of the skilled and semi-skilled manual and clerical jobs that previously accounted for the middle of the wage distribution.[44] Holmes and Mayhew have pointed to the breakdown of this approach in explaining changes in the wages associated with different jobs, however.[45] They argue that the expansion of further and higher education, coupled with de-unionisation, have played greater roles in driving wage inequality; an assessment agreed with by Firpo, Fortin and Lemieux.[46]

There is a general consensus that the collective bargaining power of labour has an impact on wage-inequality, particularly at the bottom and in the middle of income distribution. In Holmes and Mayhew's sample, for example, union membership almost halved in the UK between 1987 and 2001, declining from 29 per cent to 15 per cent.[47] Machin and Van Reenen show that there is a correlation between countries with strong union power and/or a 'decent' minimum wage and 'stable' levels of inequality.[48] Manning highlights the coincidence of the introduction of the National Minimum Wage in 1997 and declining lower tail inequality in the last decade but, as with de-unionisation, it is ultimately impossible to determine a definitive causal link.[49]

Increased international trade has also been implicated as a driver of rising UK wage inequality. Some contend that outsourcing of jobs has driven down wages for low skilled workers in the UK.[50] Machin and Van Reenen argue however that there is little academic support for this theory.[51] Instead, they maintain that the demand for more skilled workers is more likely to be responsible, because it can be seen across *all* industries.

Finally, many academics point to increased female participation in the labour market as having had a dampening effect on wage inequality. Brewer, Muriel and Wren-Lewis have documented in greater detail how female labour market participation impacted on wages over time.[52] Holmes and Mayhew argue that increased female participation initially had a negative effect on wages, because of the

[42] Van Reenen, John, *Wage Inequality, Technology and Trade: 21st Century Evidence* Centre for Economic Performance Occasional Paper, No. 28, London School of Economics, 2011
[43] Machin, Stephen and McNally, Sandra, *Higher Education and the labour market*, Centrepiece, Centre for Economic Performance, London School of Economics, 2007
[44] Goos, Maarten and Manning, Alan, *Lousy jobs and lovely jobs: the rising polarization of work in Britain*, Centre for Economic Performance, London School of Economics, 2005
[45] Holmes, Craig and Mayhew, Ken, *Are UK markets polarising?*, SKOPE Research Paper No.97, University of Oxford, 2010
[46] Firpo, Sergio, Fortin, Nicole and Lemieux, Thomas, *Decomposing Wage Distributions using Recentered Influence Function Regressions*, 2007 unpublished paper available online http://www.economie.uqam.ca/pages/docs/lemieux_thomas.pdf
[47] Holmes, Craig and Mayhew, Ken, *Are UK markets polarising?*, SKOPE Research Paper No.97, University of Oxford, 2010
[48] Machin, Stephen and Van Reenen, John, *Changes in Wage Inequality*, Special Paper No. 18, Centre for Economic Performance, London School of Economics, 2007
[49] Manning, Alan, *The UK's National Minimum Wage*, Big Ideas, CentrePiece, London School of Economics, 2009
[50] Anderton, B and Brenton, Paul, 'Outsourcing and Low-Skilled Workers in the UK' *Bulletin of Economic Research*, Vol. 61 (4), 1999, pp. 267-285
[51] Machin, Stephen and Van Reenen, John, *Changes in Wage Inequality*, Special Paper No. 18, Centre for Economic Performance, London School of Economics, 2007
[52] Brewer, Mike, Muriel, Alastair, Wren-Lewis, Liam, *Accounting for changes in inequality since 1968: decomposition analyses for Great Britain*, Government Equalities Office: UK, 2009

gender pay gap, but that this situation has reversed more recently.[53] A further implication is noted by Van Reenen, namely that, as women spend more hours at work, so household production is increasingly outsourced, creating more low-wage jobs in cooking, cleaning and childcare.[54]

[53] Holmes, Craig and Mayhew, Ken, *Are UK markets polarising?*, SKOPE Research Paper No.97, University of Oxford, 2010
[54] Van Reenen, John, *Wage Inequality, Technology and Trade: 21st Century Evidence* Centre for Economic Performance Occasional Paper, No. 28, London School of Economics, 2011

4 Conclusion and future work

In this paper we have considered – and deconstructed – the relationship between economic growth and the wages of workers in the bottom half of the earnings distribution, in order to calculate the declining share of value generated by the UK economy that has flowed to ordinary workers in the last 30 years, with its associated implications for the living standards of this group. By unpicking GDP, we have been able to determine what factors have contributed to this trend. Finally, we have considered how this national story has been affected by trends within different economic sectors and by the changing industrial structure of the UK.

We have found that growing wage inequality has been the major driver of the declining share of gross value added accounted for by workers in the bottom half, with most of the fall taking place between 1977 and 1996. This wage inequality, in turn, can be explained largely by trends taking place across all major sectors. However, while changes in the structure of the UK economy have been less influential, their importance to growth in the headline level of wage inequality does appear to have increased slightly in recent years.

Although wage inequality has been more stable since the mid-1990s, it has continued to increase, particularly at the very top of the earnings distribution. The *finance* sector has been central to this growth, recording increases in average wages and pay dispersion from 2003 outstripping anything evident in other sectors – particularly when bonus payments are included in the analysis.

The phenomenon of increasingly uneven distribution of the proceeds of growth to workers set out in this paper is not exclusive to the UK. While in the post-war period, advanced economies became used to economic growth producing comparable increases in the wages of workers across the earnings distribution, in recent years this relationship appears to have broken down across a number of countries.

Although still not a universal trend, an increasing number of nations experienced slow or negative growth in median earnings during the 1990s and 2000s, even as their economies continued to expand. Many of the factors underpinning the decline in the share of GVA enjoyed by the UK's low-to-middle income workers in the past 30 years are not constrained by national boundaries. They have, therefore, been similarly evident in a number of advanced economies, contributing to a more widespread breakdown in the relationship between growth and the earnings of workers.

In the coming months, we will build on the **international picture** by analysing trends in labour share, wage share and wage dispersions across countries with varying records on distributing the gains of growth, presenting thoughts on the policies and economic environments that have influenced trends in each country. We are also working with a number of leading economists in key areas touched on in this paper:

- Professor John Van Reenen of the London School of Economics is conducting new research into the relationship between **GDP, productivity and pay** in the UK economy and internationally;

- Professor Mike Brewer and Liam Wren-Lewis of the Institute of Fiscal Studies are analysing the key **economic and social factors** that have helped to drive **household income growth** in recent decades;

- Researchers at the Institute of Social and Economic Research at the University of Warwick, working with colleagues from the Institute for Fiscal Studies, are modelling **future trends in the UK jobs structure**, and their impact on people on low-to-middle incomes;

- Professor Ken Mayhew and Craig Holmes of SKOPE at the University of Oxford are examining the **implications of the UK's changing industrial structure**, including the potential influence of job polarisation, and the rise of personal services sectors on wages at the bottom end of the labour market;

- Professor Lane Kenworthy at the University of Arizona is conducting a comparative international study focused on the question: '**when does economic growth benefit people on low-to-middle incomes?**'; and

- Professor Alan Manning of the London School of Economics is examining the **impact of the minimum wage on employment** and the likely implications of future increases in its level.

These papers will sit alongside research on other topics of relevance to living standards – from assets and debt to the cost of living – that will feed into the work of the *Commission on Living Standards*. It will inform the Commission's final report, scheduled for publication in summer 2012.

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We do this by:

- undertaking research and economic analysis to understand the challenges they face;
- developing practical and effective policy proposals; and
- engaging with policy makers and stakeholders to influence decision-making and bring about change.

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