Resolution Foundation | Commission on Living Standards

Painful separation

An international study of the weakening relationship between economic growth and the pay of ordinary workers

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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.

The Commission is bringing together a wide range of leading thinkers to examine these trends, from private and public sector employers to economists, experts in public opinion and representatives of parent networks. The Commission is independent and is engaging with politicians from across the spectrum. The members of the Commission are:

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Executive summary

Two years on from the end of recession, the UK economy remains mired in slow growth. While all members of society can claim to be feeling the pinch to some degree, ordinary workers are facing particularly difficult times. As much of our work in the past year has shown, the squeeze on living standards is more than a passing storm for households on a low to middle income.

Our report *Growth without gain?* revealed that the living standards of ordinary working people were faltering long before the onset of recession. Despite GDP growth of 11 per cent between 2003 and 2008, median wages were stagnant and per capita disposable income fell at the household level in every region outside London. Similarly, we showed in *Missing Out* that just 12p of every £1 created by the UK economy finds its way to the wages of workers in the bottom half of the earnings distribution, a drop of one-quarter over the past 30 years. While shifts in the distribution of rewards between profits and wages played their part in this trend, by far the biggest factor was the significant growth in pay inequality observed over this period.

This work has raised a warning about living standards and has begun to bring definition to what is a broad and potentially amorphous problem. But developing policy responses requires both greater precision and a clearer sense of our power to act. In particular, we need to know which aspects of the living standards challenge are realities of a modern economy that need to be accommodated, and which we can change through policy. To this end, in the coming months we will be publishing a series of more technical reports with an international focus, in an attempt to unpick the complicated relationship between economic growth and the material wellbeing of ordinary working people.

This first report looks at the specific question of how effective wages are as a mechanism for sharing out the proceeds of growth. It examines the relationship between per capita GDP growth and median wages across ten advanced economies over the past 40 years. These countries have been chosen because they offer useful parallels and contrasts to the UK economy. The aim is to give us a clearer understanding of whether – and in particular *why* – some labour markets are better than others at broadly distributing the proceeds of economic growth through wages.

Second, a report from Professor Lane Kenworthy of the University of Arizona will switch to a focus on *incomes* as opposed to earnings. In doing so, it will allow a better understanding of the role played by the tax-benefit system in distributing the proceeds of growth. Specifically, the report compares trends in per capita GDP growth and household income in the bottom half of the distribution across 17 countries over 30 years. It asks 'when does economic growth benefit people on low to middle incomes – and why?'

Third, a report from Professor John Van Reenen of the London School of Economics will bring greater precision to the idea of a 'decoupling' of economic growth and material wellbeing. Specifically, it will define different types of 'decoupling' which have and have not taken place. By looking across different economic definitions and datasets, the report work will pinpoint more precisely the way in which the relationship between growth and material wellbeing has and has not changed over time.

Diagnosing the problem: the strength of the link between growth and median pay

Turning to the focus of this report, we examine the effectiveness of wages as a mechanism for sharing broadly the proceeds of growth. Our comparison of average annual growth rates of median wages and GDP per capita in the period from 1970 shows that the relationship between the pay of ordinary workers and general economic performance has, to different degrees, broken down in every one of the ten countries considered in this report. The magnitude and persistence of this disconnect has varied somewhat, however. As such, we can establish three separate groups of countries:

- In our first group, the breakdown in relationship is ***chronic***. That is, in the **US**, **Australia** and **Canada** median pay consistently and significantly grew at less than half the rate of economic output.
- In our second group, the breakdown is more recent, but just as severe. In this ***acute*** group of the **UK**, **France** and **Germany**, median pay tracked growth in economic output for long periods, but increased at less than half the rate of GDP per capita in the last decade.
- Finally, in our third group the breakdown is again recent but in this instance ***mild***. As with the second group of countries, median pay fell behind economic output in **Finland**, **Japan**, **Denmark** and **Sweden** in the most recent decade but the gaps that opened up were relatively small.

It is important to note that these distinctions are not intended to represent 'good' or 'bad' economic performance. Of course, a strong relationship between wages and growth can be caused by poor GDP figures just as much as by rapid increases in wages. Very clearly, the Japanese experience of the past 20 years cannot be held up as an economic role model when it comes to trends in living standards. But, in focusing specifically on the *relationship* between growth and gain, these groupings help us to identify differences across countries and learn some lessons from those variations.

Understanding the symptoms: locating the breakdown

In order to understand what has influenced these differing trends, we need to determine the connection between economic output and pay and thereby identify where exactly the link has broken down in each instance.

The value generated by an economy feeds through into median wages in three steps: if we think of GDP as being a pie, then first it is divided between rewards for workers (the 'labour share') and profits (the 'capital share'); secondly, the labour share 'slice' is divided into rewards paid in the form of wages (the 'wage share') and rewards paid as social contributions by employers (the 'non-wage share') such as pension contributions and health insurance payments; and thirdly, the wage 'slice' is shared out between employees, with workers at the top, middle and bottom taking different sized bites.

A weakening of the link between median pay and GDP can occur because of shifts in any of these factors, but is more commonly the result of a combination of all three. Looking across the three median wage performance groups established above, we can identify a number of common, though not universal, trends:

- The **share of GDP flowing to workers** rather than profits (the 'labour share') tended to fall over the period in the first two groups (*chronic* or *acute* economies) but increased in group three (*mild*) countries.

- The **share of employee rewards paid as wages** (the 'wage share') fell over the period in nearly all of the countries, irrespective of median wage performances, with corresponding increases in indirect employee benefits associated with employer contributions to pensions and social programmes.

- Inequality in the **distribution of pay** was both higher and more likely to increase over the period in the *chronic* and *acute* countries than in the *mild* group, though it increased in nearly all countries in the 2000s.

It would therefore appear that the economies in which the relationship between growth and gain has best held up can most clearly be distinguished by their relatively low levels of wage inequality. They have also, to a lesser degree, continued to secure a higher share of national income for labour as opposed to profits, but they have differed little in their tendency to place a higher emphasis on non-wage employee rewards.

Identifying the causes: investigating underlying policy environments

This deconstruction of the connection between GDP and pay is useful in explaining the factors at play in the apparent breakdown in the relationship between growth and gain, but it doesn't tell us what has *caused* differences in performances across countries. For this we need to look at a growing body of literature, which offers a number of inter-related explanations.

- First, we know that the development of technology has served to increase the productivity of, and demand for, high-skilled workers while at the same time replacing many of the tasks traditionally undertaken by low- and medium-skilled workers. This **skill-biased technical change** (SBTC) means that, even as the supply of graduates has increased in advanced economies, the wage premium associated with education has continued to grow.

- Secondly, the growth of **international trade** has encouraged the outsourcing of many routine jobs to emerging markets and therefore further depressed the wages of lower skilled workers in advanced economies.

- Thirdly, firms have tended to increase the emphasis they place on **shareholder value**, at the expense of rewards for ordinary workers.

- Finally, reductions in the **bargaining power of workers** in a number of countries have been associated both with falling labour shares of income and with growing inequalities in pay.

Drawing lessons from this literature for our three country groups is difficult. But if an overlap can be discerned, it is this: workers in our *chronic* group have been particularly exposed to these global macroeconomic factors because of the openness and flexibility of the labour market models in place in their countries. By contrast, in our *mild* countries, ordinary workers have been protected to a greater extent from the effects of these global macroeconomic trends by the policy choices of their governments and by the presence of stronger labour market institutions.

That said, even in this group of countries, ordinary workers have received a declining share of the proceeds of growth in recent years, thanks both to the steady unravelling of wage-setting processes and to a contraction of opportunities for lower skilled workers in economies that are increasingly based on high-tech industry. Proponents of these systems must therefore face up to a difficult question: to what extent will their economic strategies prove sustainable as these global economic trends accelerate?

Treating the problem: can the link between growth and median pay be restored?

The evidence we have uncovered of breakdowns in relationships between economic growth and median wages in all of the countries we have considered is clearly worrying. However, the varying experiences of our three groups of countries may offer some clues as to how detachment can be slowed and perhaps reversed: what works and what doesn't?

Interestingly, despite residing in the *acute* group, France may offer the best example of a country in which ordinary workers continue to prosper. That is, although wages at the median have fallen some way behind economic growth, this has not occurred as it has in most other countries because of acceleration in pay for workers at the *top* of the distribution, but instead because of a disproportionate increase in the wages of those at the *bottom*. Policies such as the indexing of the minimum wage to consumer prices and the imposition of wage agreements have helped to hold at bay the march of trends that appears inexorable in other countries.

Of course, a blind focus on wages risks masking the potential employment trade-off associated with relatively high levels of pay at the lower end of the earnings distribution, and France has consistently been at the bottom of our list of ten countries in terms of unemployment performance. However, this relationship is by no means straightforward, with several members of the *mild* group performing well. It is also possible that any trade-off that may have existed is starting to change. In the US for example, unemployment rates have edged closer to the average of the ten countries covered here for a number of years and stood second only to France in 2010. Similarly, the steady march of employment growth that characterised the US labour market for most of the 40 years considered here appears to have come to an end in the 2000s, long before the onset of recession in 2008.

Therefore, while it is true that a number of factors have come together in recent years to challenge the long-held assumption that improvements in the living standards of ordinary workers rest almost exclusively on improvements in the general performance of the economy, the findings in this paper show that the outright severance of this relationship may not be inevitable. With many advanced economies at something of a crossroads in the post-financial crisis era, restoration of the link between growth and living standards represents not just a key economic challenge, but also a new opportunity.

Structure of the report

The report is set out as follows:

- **Chapter 1** presents evidence of changes in the strength of the link between economic growth and the pay of ordinary workers in each of the ten countries by setting out comparisons of median pay and GDP per capita growth rates for the period 1970-2010.
- **Chapter 2** deconstructs the relationship between economic output and median pay, and sets out trends in the various elements that contribute to this association in each country.
- **Chapter 3** considers the political and economic environments in place in each of the ten countries, in order to provide some context and explanation for the variations in median wage performances that we have observed.

While each chapter contains summary tables, detailed charts are collected in a **Technical Annex**, along with commentaries on trends in each country. The annex also includes details of the data sources used and the associated limitations.

1 Growth without gain?

At the heart of the pursuit of economic growth in recent decades has been the assumption that it leads, over time, to improvements in living standards. Of course, not everyone wins in times of economic expansion; by pursuing strategies to reduce poverty or to provide support for the most vulnerable, governments have long acknowledged that growth does not automatically benefit all members of society. But there are fewer such strategies for people in work because they are expected to feel the upside of growth directly each month, in their pay.

Alongside considering how well equipped our economy is for growth, we must therefore also have a concern for how good it is at sharing the proceeds of growth through the mechanism of wages. In *Missing Out*[1] we went some way to answering that question in relation to the UK by calculating the proportion of national income accrued by employees in the bottom half of the earnings distribution in the form of wages. The answer did not make for happy reading: in the past 30 years, the share of every £100 of value generated in the UK economy accounted for by this particular group fell by a quarter, from £16 in 1977 to just £12 in 2010. The chief driver of this decline was growing wage inequality, though the falling share of income going to labour also played a part.

This report goes a step further by asking whether this shift towards a model of growth without gain is the new normal: is it inevitable and mirrored in every other similar country, or are some nations managing to shape, mitigate or prevent the onset of such a phenomenon? We look at trends in ten countries that together account for three-quarters of total GDP in the OECD,[2] and which provide examples of a variety of different market economy models. We focus in each instance on the relationship between the wage rewards flowing to ordinary workers and per capita economic growth. As far as possible, we consider changes in the period 1970-2010.

This first chapter builds on our previous analysis by comparing the growth rates of median pay and economic output in each country. In Chapter 2 we deconstruct the relationship between growth and earnings in order to consider the factors behind the patterns displayed in each case, while in Chapter 3 we set out some of the country-specific experiences that might help explain the variation in median wage performance.

[1] Resolution Foundation, *Missing out: Why ordinary workers are experiencing growth without gain*, July 2011
[2] OECD Stat

1.1 Tracking changes in economic growth and pay

We begin by comparing trends in links between pay (measured in terms of median earnings) and economic growth (measured in terms of GDP per capita) in each of the ten countries we are concerned with here, with detailed findings set out in Figure A1 in the Technical Annex.[3] Because we are focused on the relationship between pay and growth *within* countries, each chart should be looked at in isolation, with particular reference being made to evidence of divergence in the *slopes* of the lines; that is, the similarity or otherwise of the pace of growth of each measure.

Table 1 provides a summary of experiences across the countries by comparing average annual growth rates in median wages in each decade with average annual growth in GDP per capita.[4] For each country, decades during which the pay of ordinary workers grew at less than half the pace of economic output are highlighted in green (darker boxes in black and white). Similarly, periods during which wages grew at less than three-quarters (but more than half) of the GDP rate are highlighted in pink (lighter boxes in black and white).

For each country, two sets of figures are presented for the most recent decade. The first covers the decade as a whole (2000 to 2009), while the second covers only the period prior to the global recession in 2008 and 2009. We make this distinction because in most instances median wages continued to grow even as economic output declined (in part because of the disproportionate loss of low-paying jobs during recession). The second set of data, excluding recession, therefore provides a better indication of the extent to which ordinary workers were sharing in the proceeds of economic growth during a period of sustained expansion.

[3] Most of the data in this report is sourced from OECD Stat, which in turn is based on national returns. This is an imperfect approach, with some inconsistencies occurring across countries and over time. It is, however, the most comprehensively available source and we have used direct national sources where the OECD data appears particularly problematic. Further explanations of the data limitations are provided in the notes to Table 1 and in the Technical Annex.

[4] Note, because of data availability, the analysis is in most instances limited to weekly, monthly or annual wage figures. It therefore risks conflating changes in working patterns with changes in pay. The use of hourly pay data and GDP per worker represents a better examination of the relationship of pay to productivity, but such data is not available on a consistent basis across countries or over a sufficient timeframe. For the purpose of indicating the magnitude of difference such an approach might make to our findings, we undertake this analysis in relation to the UK for those years in which data *does* exist in Section A2 of the Technical Annex. We will revisit the issue of productivity in much more detail in a forthcoming paper from John Van Reenen at the LSE.

Table 1: Average annual rates of change in growth and earnings

	1970s	1980s	1990s	2000s	2000s *pre-recession*
Consistently weak relationship between economic growth and median pay (chronic breakdown)					
US					
GDP per capita	+2.6%	+2.1%	+2.0%	+0.9%	+1.6%
Median	+0.4%	+0.4%	+1.0%	+0.6%	+0.4%
Australia					
GDP per capita	+1.8%	+1.9%	+2.0%	+1.5%	+2.0%
Median	+0.8%	+0.6%	+2.5%	+0.7%	+0.6%
Canada					
GDP per capita			+4.0%	+1.0%	+1.9%
Median			+0.6%	+0.4%	+0.0%
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)					
France					
GDP per capita	+3.3%	+1.8%	+1.5%	+1.1%	+1.4%
Median	+4.2%	+1.4%	+1.6%	+0.2%	+0.2%
UK					
GDP per capita	+2.3%	+2.3%	+2.0%	+1.3%	+2.4%
Median	+1.4%	+2.2%	+1.7%	+1.1%	+1.0%
Germany					
GDP per capita		+2.4%	+1.3%	+1.5%	+1.5%
Median		+1.3%	+2.3%	+0.1%	+0.1%
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)					
Japan					
GDP per capita	+4.1%	+3.8%	+1.2%	+0.6%	+1.6%
Median	+2.6%	+1.9%	+1.7%	+0.8%	+1.2%
Finland					
GDP per capita	+4.7%	+3.8%	+1.3%	+2.9%	+2.9%
Median	+0.9%	+2.7%	+1.4%	+2.3%	+2.3%
Denmark					
GDP per capita		+2.1%	+2.1%	+1.2%	+1.5%
Median		+1.4%	+2.0%	+0.7%	+0.9%
Sweden					
GDP per capita			+3.2%	+1.5%	+2.8%
Median			+3.5%	+1.8%	+1.9%

median wage growth less than half the rate of GDP per capita growth

median wage growth less than three-quarters the rate of GDP per capita growth

Notes: All figures adjusted using relevant country GDP deflators. While CPI-deflated earnings would provide a better reflection of changes in living standards, GDP-deflation is more appropriate for comparison with economic output.
The data is not directly comparable across countries for a number of reasons. First, the figures are not adjusted for changes in purchasing power parity or exchange rates and secondly, wage measurements and definitions vary from country to country. Instead, each chart serves to compare growth and wage performance within the country specified. In each instance, the index year is the earliest for which data is available. **US**: median gross usual weekly earnings of all full-time workers aged over 16; **Australia**: median gross weekly earnings in main job (and all jobs prior to 1988) of full-time employees; **Canada**: median gross weekly earnings of full-time workers; **France**: median annual salary for full-time employees in the private sector only; **UK**: median gross weekly earnings of all full-time workers; **Germany**: median gross monthly earnings of full-time workers; 1984-1990 data is for West Germany; 1991 onwards is for unified Germany; throughout the timeframe shown, the GDP deflator used is for Germany as a whole, based on OECD estimates for the pre-unification period; **Japan**: median scheduled gross monthly earnings of regular, full-time employees; excludes employees in establishments with fewer than ten regular workers and all employees in the public sector, agriculture, forestry and fisheries, private household services and foreign embassies; data exclude overtime earnings; **Finland**: median gross annual earnings of full-time workers; **Denmark**: median gross hourly earnings of all workers; workers receiving less than 80% of the minimum wages are excluded; **Sweden**: median monthly salary for full-time employees including fixed allowances, incentive pay, bonuses, payments for shift work, unsocial hours etc, compensation for contingency and emergency, benefits and other cash compensation; .
Time periods relate to those years within each decade for which data on both GDP and earnings are available. For example, while the UK data for the 1970s covers the entire decade (1970-79) the Australia data refers to the years 1975-79 only.

Sources: OECD Stat; Statistics Sweden; French data provided by Laurence Rioux, INSEE

1.2 Conclusion

As a starting point for our consideration of whether the phenomenon of growth without gain in advanced economies is a universal one, the analysis in Table 1 and Figure 1 shows that median wages grew less quickly than economic output in the most recent decade in *all ten* countries. There are, however, major variations in the persistence and magnitude of this breakdown in relationship between growth and pay that allow us to split the countries into three loose groups:

1. ***Consistently weak relationship between economic growth and median pay***: increases in GDP per capita in this group – which includes the **US, Australia and Canada** – far outstripped median wage growth throughout the period *(boxes are consistently green)*;

2. ***Recent and sharp deterioration in relationship between economic growth and median pay***: median wage growth in this group – which includes **France, the UK and Germany** – initially kept pace with GDP per capita, but subsequently lost ground *(boxes are green in the most recent decade)*; and

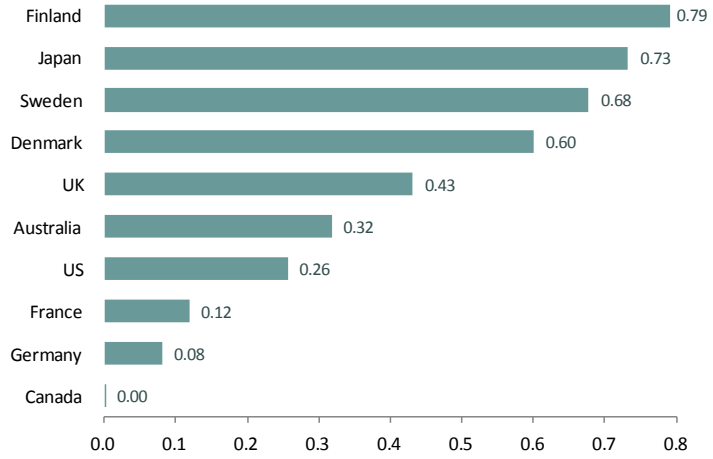
3. ***Recent and mild deterioration in relationship between economic growth and median pay***: median pay growth in this group – which includes **Japan, Finland, Sweden and Denmark** – grew strongly relative to GDP per capita during the 1990s, but fell behind the pace of economic output in the 2000s (boxes are predominantly pink in the most recent decade).

For shorthand, we can label conditions in the three groups as ***chronic*** (group one), ***acute*** (group two) and ***mild*** (group three). It should be noted though that these categorisations are indicative only, and are clearly open to challenge.[5]

Figure 1 presents ratios of the pay and GDP figures captured in the final column of Table 1 for each of the ten countries. It therefore compares the extent to which median wages tracked GDP per capita in the period prior to the global recession. Figure 2 goes further back, looking at the average ratios of median pay to GDP per capita recorded within each of our three median wage performance groups.

[5] Three selections merit particular consideration. First, a lack of median wage data pre-1990 in Canada makes it difficult to state definitively that the breakdown in the relationship between GDP and pay is a long-established phenomenon there, as it is in the US and Australia. But the magnitude of the gap between GDP per capita and median wage growth points towards such a conclusion. This classification is also supported by work carried out by the Canada based *Centre for the Study of Living Standards* (CSLS). Using data from the Canadian Census, the CSLS found that median real earnings in the country stagnated in the period between 1980 and 2005, despite a 37 per cent increase in labour productivity. (CSLS Research Report No. 2008-8, *The Relationship between Labour Productivity and Real Wage Growth in Canada and OECD Countries*, December 2008). Secondly, a case could be made for describing conditions in some of the group three countries as *chronic* given the presence of pink and green boxes in the 1970s and 1980s. We have decided to instead present them as *mild* countries because they displayed strong median wage growth in the 1990s which, unlike in all three group one countries, persisted into the first half of the 2000s. Thirdly, as noted in Section A2 of the Technical Annex, the Japanese data excludes 'irregular workers' who are thought to comprise up to one-third of the total workforce and who typically receive lower wages than regular counterparts. Given that numbers of such workers grew disproportionately during the 1990s, it is likely that data set out in Table 1 overstates the level of median wage growth and therefore understates the extent of the breakdown between economic growth and the pay of ordinary workers.

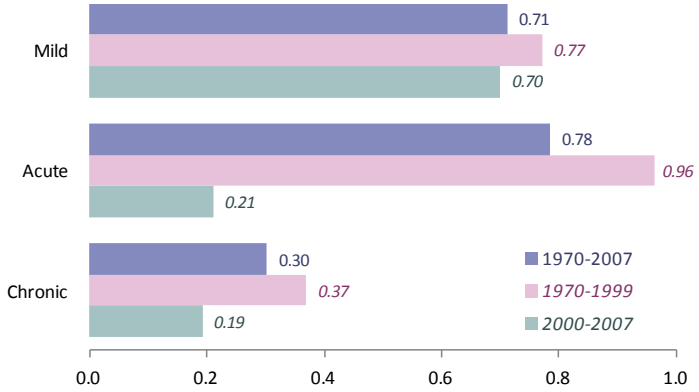
Figure 1: Ratios of average annual growth in median pay to average annual growth in GDP per capita: 2000 - 2007



Notes: Ratios below 1 indicate that wages have grown more slowly than output. 2007 is used as the end-point in order to remove the temporary effects of the recent recession. Exceptions are Germany and Finland, where 2008 is used because recession did not start until the following year. For more detail on data sources, see notes to Table 1.

Sources: OECD Stat; Statistics Sweden; French data provided by Laurence Rioux, INSEE

Figure 2: Ratios of average annual growth in median pay to average annual growth in GDP per capita within each median wage performance group: 1970 – 2007



Notes: Bars represent un-weighted averages of ratios recorded in the countries within each group. Data for 1991 is removed from Germany (and therefore the *Acute* group) to avoid the temporary effects of unification. For more detail on data sources, see notes to Table 1.

Sources: OECD Stat; Statistics Sweden; French data provided by Laurence Rioux, INSEE

Figure 1 shows that median pay grew less quickly than output per person in *all* of the countries between 2000 and 2007, but that there was significant variation in performance.

Median pay increased at four-fifths of the pace of GDP per capita in Finland (0.79), three-quarters in Japan (0.73) and two-thirds in Sweden (0.68). In contrast, it increased at one-tenth of the rate of economic output in France (0.12) and Germany (0.08). In Canada, median wages failed to increase at all over the period.

On this measure, the UK was ranked fifth among the ten countries, with a ratio of median pay to GDP per capita of 0.43.

Figure 2 shows that ratios of pay to output fell in all three median wage performance groups in the most recent decade. It highlights the sharp nature of the decline in the *acute* group, in comparison with the much smaller drop in the *mild* group and the consistently low ratios observed in the *chronic* group.

Taking the period as a whole, the *acute* group recorded a higher ratio of median pay to GDP per capita than the *mild* group, owing to the performance of Finland and Japan in the 1970s and 1980s. However, by the end of the period there is a clear distinction between those countries in which the link between pay and output appears to have broken down (*chronic* and *acute*) and those in which it has simply weakened (*mild*).

2 The relationship between growth and pay

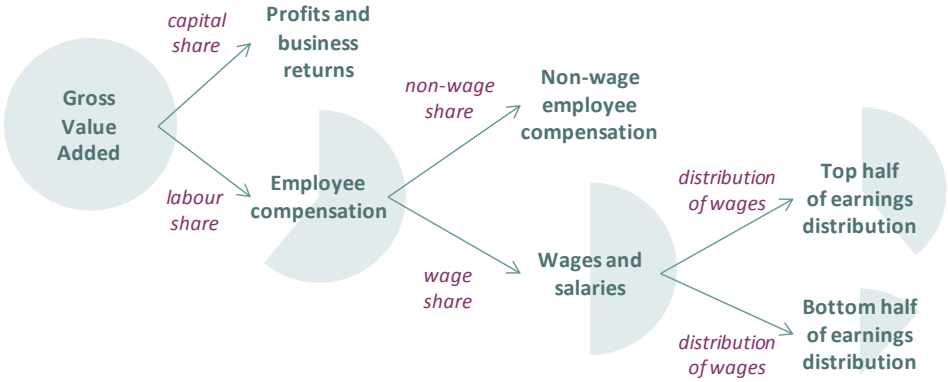
Having established in the previous chapter the differing levels of connection between median pay and GDP per capita that are evident across the ten countries we consider, we next turn to a deconstruction of the relationship between economic growth and earnings in order to pick out the key drivers in each instance. To do so, we return to the formulation we set out in *Missing Out* which showed that the extent to which pay for any particular group of workers tracks growth in GDP is dependent on trends in three variables: the *labour share of income*, the *wage share of employee compensation* and *pay dispersion*. We set out this formulation below.

2.1 Measuring GDP

Formally, GDP[6] 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*

To understand the link between GDP and wages, we can remove taxes and subsidies from this equation and thereby focus on *production at basic prices* or *Gross Value Added* (GVA). This measure captures the value that is generated by any unit engaged in economic production (for example, an employee at work), in both the private and public sectors. Moving from GVA at the economy wide level to the wages received by individuals can be viewed as a three stage process, as shown below.

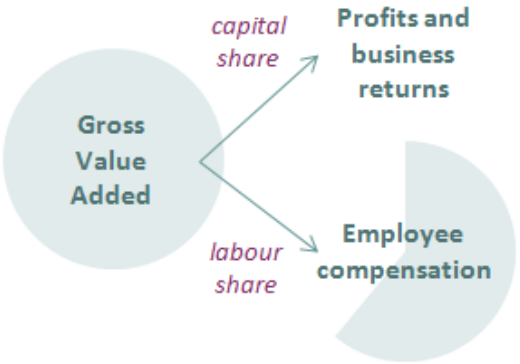


[6] This definition is based on the 'income method' of calculating GDP. In national accounts there are three methods for measuring GDP; income, expenditure and output. Each method arrives at (broadly) the same result, but reaches it by counting different elements of economic output. The income method – GDP(I) – adds up all income earned by resident individuals (*employee compensation*) or corporations (*profits and business returns*) 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 provide individuals with money to spend, they are a redistribution of existing incomes and do not represent any addition to current economic activity. More detail is provided in the ONS publication *United Kingdom National Accounts Concepts Sources and Methods*.

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

2.2 The share of income going to labour

As set out above (and repeated on the right), at the first stage of this process GVA can be expressed as the sum of *employee compensation* (the labour share) plus *profits and business returns* (the capital share). The *labour share of income* can therefore be calculated by dividing employee compensation by GVA.[7]



In simple terms, this provides us with the proportion of economic value that accrues to employees rather than owners of capital.[8]

The series of charts presented in Figure A2 in the Technical Annex provide details of trends in each of our ten countries. Table 2 offers a summary, highlighting similarities and differences across the three median wage performance groups we established in Chapter 1.

For each country it sets out the labour share at the start and end of the period (we use 2007 as the endpoint even where more recent data is available in order to avoid the temporary increase in

[7] In practice, the calculation involves dividing employee compensation in each sector of the economy by the associated sector level GVA (in nominal terms and at factor cost) and producing a composite based on the contribution of each sector to the aggregate level GVA.

[8] As we showed in *Missing Out*, this relatively straightforward equation is complicated by the classification of the self-employed. In terms of the GVA equation set out above, the compensation of people who are self-employed is included in the *capital share of income* rather than in the *labour share*, because self-employed workers are, in effect, simply retaining the profits of their business. As a result, if definitional changes or tax incentives mean that the proportion of people are who are self-employed has changed over time, the labour share measure will under-or over-report the value that accrues to 'workers' in the way we might typically view them. To understand the importance of this we have calculated a second, *adjusted*, labour share in each of the ten countries by applying a self-employment ratio to the initial labour share, with the results presented in Figure A2 in the Technical Annex. These charts show that, within most countries, the adjusted and unadjusted figures have converged over the period, meaning that the distinction between the two has become less important over time. Moreover, because the median wages set out in Figure A1 relate exclusively to *employees*, we focus primarily in this paper on trends in unadjusted labour shares.

labour share associated with recession[9]), along with the percentage point change. We also show the direction and magnitude of travel in each individual decade. Green arrows denote an increase in share over the period and pink arrows denote a decrease, with single arrows indicating relatively small movements (less than one percentage point) and double arrows indicating larger changes.

Table 2: Changes in unadjusted labour share of income in a selection of countries: 1970 – 2007

	Labour share in 1970	Direction and magnitude of travel[1] 1970s	1980s	1990s	2000s[2]	Labour share in 2007[2]	Percentage point change
Consistently weak relationship between economic growth and median pay (chronic breakdown)							
US	64%	↓	↓↓	↓	↓↓	60%	-3.1%
Australia	60%	↓↓	↓↓	↓	↓↓	53%	-7.1%
Canada	59%	↓↓	↑	↓↓	↑	55%	-3.8%
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)							
France	56%	↑↑	↓↓	↑	↓	57%	+0.9%
UK	65%	↓↓	↓↓	↓↓	↓↓	60%	-5.3%
Germany	59%	↑↑	↓↓	↓↓	↓↓	55%	-3.7%
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)							
Japan	41%	↑↑	↓↓	↑↑	↓	49%	+8.2%
Finland	55%	↑↑	↑↑	↓↓	↑↑	56%	+1.0%
Denmark	59%	↑↑	↓	↑	↑↑	65%	+6.1%
Sweden	66%	↑↑	↓↓	↓↓	↓↓	61%	-4.9%

Notes: [1] Compares labour share at the beginning and end of the decade. ↑ and ↓ denote movement of less than 1 percentage point; ↑↑ and ↓↓ denote larger movements.
[2] 2007 is used as the end-point in this table in order to remove the temporary effects of the recent recession. Exceptions are Germany and Finland, where 2008 is used because recession did not start until the following year.

Source: OECD Stat

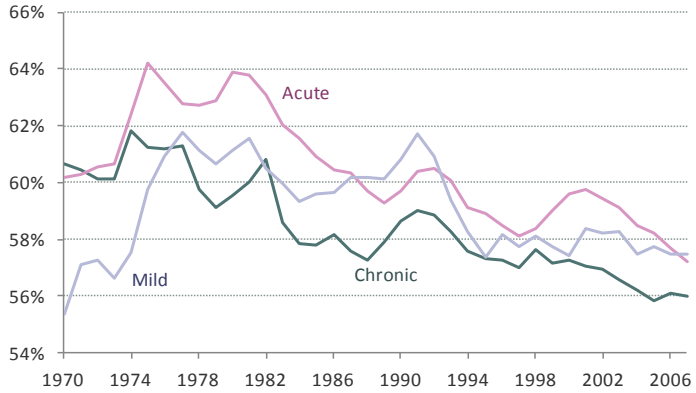
The most obvious difference highlighted by Table 2 is that labour shares fell between 1970 and 2007 in five of the six countries classified as experiencing *chronic* or *acute* breakdowns in the relationship between median pay and growth (with France the exception), but increased in three of the four countries recording a *mild* deterioration (with Sweden the exception). There is, therefore, some indication of a link between median wage performances and changes in labour shares.

It is worth noting, however, that shares in all countries became increasingly likely to fall over the decades: in the 1970s, six of the ten countries recorded an increase in labour share; in the 1980s just two did (Canada and Finland); in the 1990s it was three (Japan, Denmark and France); as it was again in the 2000s (Canada, Finland and Denmark). It is likely that the oil price crisis of the 1970s contributed to a temporary increase in labour share in many countries (by depressing non-labour productivity and therefore profits), with the steady declines observed since that decade providing a better reflection of the long-term trends in the division of GVA between workers and capital.

Figure 3 provides more detail by comparing average labour share figures over the period in each of our three median wage performance groups.

[9] Labour share of income tends to rise during recessions because profits fall more quickly than pay. Conversely, labour share tends to fall during periods of recovery.

Figure 3: Average labour share of income within each median wage performance group: 1970 - 2007



Notes: Lines represent un-weighted averages of the labour shares recorded in the countries within each group (measured by dividing total compensation of employees by gross value added at factor cost). In each group, averages are omitted in years where data is available for fewer than half of the constituent countries. As with Table 2, 2007 is used as the final year in order to remove the temporary effects of the recent recession. For a fuller discussion of the data in each country, see the Technical Annex.

Sources: OECD Stat; Statistics Sweden

Despite some fluctuations, it is clear that the share within the *chronic* group fell relatively steadily over the period.

The pattern was similar within the *acute* group although, by contrast, the share *rose* initially before falling for the remainder of the period.

The trend in the *mild* group was slightly different, with the average labour share rising in the first decade and remaining relatively flat from 1995 onwards.

Despite these differences, average labour shares converged across the three groups, resulting in very similar levels at the end of the period.

2.3 The share of labour income paid as wages

The second stage in the move from GVA to median earnings set out above (and repeated on the right) looks at the proportion of all income received by labour (the *labour share*) that is paid out as wages (the *wage share of employee compensation*), rather than as social contributions such as (in the UK) employer NICs and employer pension contributions (the *non-wage employee compensation*).[10]

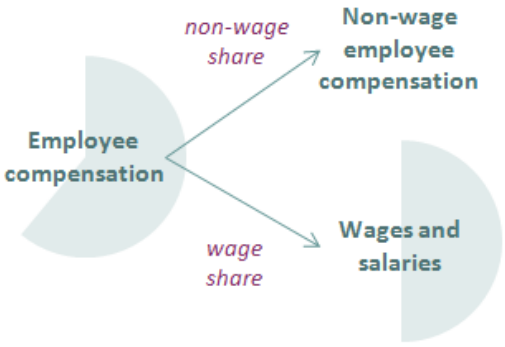


Figure A3 in the Technical Annex shows that trends in this element appear to be relatively uniform: while the level has varied across countries, the path of the wage share has been predominantly downwards. Table 3 provides a summary for the three groups we have established. It shows that, although the largest percentage point drop occurred in the US, there were also sizeable declines among members of the *acute* and *mild* countries. Wage share over the period was consistently highest in Denmark (standing at 91 per cent in 2010) and lowest in France (74 per cent), Australia (74 per cent) and Sweden (76 per cent). There was little to separate the other countries considered.

[10] Non-wage compensation more generally includes expenditure by employers or public authorities 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 childcare and other fringe benefits. As discussed in *Missing Out*, the UK trend appears to have been driven primarily by changes in employer NICs, with each reduction in the wage share coinciding with an increase in the main employer rate.

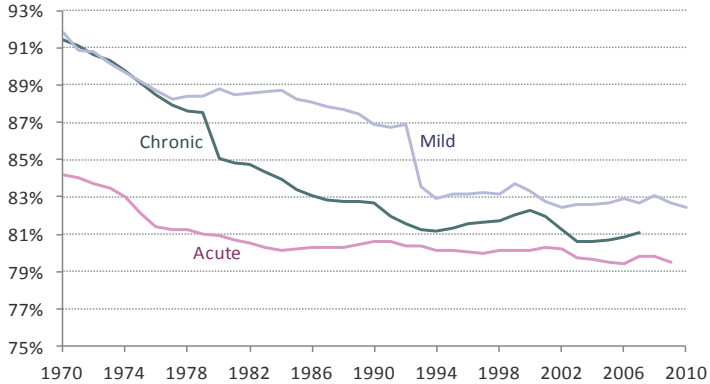
Table 3: Changes in wage share of employee compensation in a selection of countries: 1970 - 2010

	Wage share in 1970[2]	Direction and magnitude of travel[1] 1970s	1980s	1990s	2000s[2]	Wage share in 2010[2]	Percentage point change
Consistently weak relationship between economic growth and median pay (chronic breakdown)							
US	89%	↓↓	↓	↑↑	↓↓	80%	-9.0%
Australia	80%		↓↓	↓↓	↓↓	74%	-6.6%
Canada	93%	↓↓	↓	↓↓	↓↓	88%	-5.9%
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)							
France	76%	↓↓	↓↓	↑	↑	74%	-2.2%
UK	91%	↓↓	↑↑	↓	↓↓	83%	-8.0%
Germany	86%	↓↓	↓	↓↓	↑	81%	-4.9%
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)							
Japan	90%		↓↓	↓	↓	85%	-4.5%
Finland	88%	↓↓	↓	↓↓	↑↑	81%	-7.5%
Denmark	96%	↓	↓	↓↓	↓↓	91%	-4.7%
Sweden	74%			↑↑	↑↑	77%	+2.2%

Notes: [1] Compares wage share at the beginning and end of the decade. ↑ and ↓ denote movement of less than 1 percentage point; ↑↑ and ↓↓ denote larger movements.
[2] Earliest data is 1993 for Sweden and 1980 for Australia and Japan. Latest data is 2007 for Canada, 2008 for Japan and 2009 for US and France.
Source: OECD Stat

Therefore, unlike in the case of *labour shares*, there is little evidence to suggest that trends in *wage shares* have varied across countries by median wage performance.

Figure 4: Average wage share of employee compensation within each median wage performance group: 1970 - 2010



Notes: Lines represent un-weighted averages of the wage shares recorded in the countries within each group. In each group, averages are omitted in years where data is available for fewer than half of the constituent countries. For a fuller discussion of the data in each country, see the Technical Annex.
Sources: OECD Stat; Statistics Sweden

Figure 4 highlights the similarity of movement across the three income groups.

For example, average wage shares in the *chronic* and *mild* groups started and ended the period at very similar levels, although the patterns of change did vary somewhat during the 1980s (with large step-changes in 1980 and 1993 owing much to inclusion of countries for which data was not previously available).

Average wage share in the *acute* group was significantly lower than in the other two groups in 1970, but this gap closed in the period to 1994 and subsequently tracked the levels recorded elsewhere relatively closely.

2.4 The wage pot as a share of GVA

At this point we can pause and reconsider the relationship between GVA and median earnings. So far we have calculated the share of the GVA pie going to workers (the labour share) and the share of this slice paid as wages (the wage share). By multiplying one proportion by the other we can calculate the share of GVA paid out as wages: that is, the *total wage pot* as a share of GVA.

In *Missing Out* we determined that one-third of the reduction in the share of GVA flowing to workers in the bottom half of the earnings distribution in the UK between 1977 and 2010 took place because of a decline in this wage pot. That is, one-third of the downward trend was associated with a reduction in the proportion of value accruing to *all* workers rather than just those in the bottom half. Similarly we might expect that, across the countries considered in this report, at least some parts of the trends we observed in Chapter 1 in relation to median wage growth are not particular to those in the middle of the earnings distribution, but are instead affecting all workers.

Table 4 provides this analysis by showing changes in the shares of GVA accounted for by the total wage pot in each country over the past four decades. Declines are evident in most of the countries considered, with the largest percentage point falls taking place in the first two of the groups we have established – that is, those countries where median wages have performed least well relative to growth. It is particularly noticeable that directions of travel in the 1990s and 2000s were almost universally downwards in the countries in the *chronic* and *acute* groups, but much more mixed in the *mild* group of nations, with both Finland and Denmark recording an increase in share of more than one percentage point in the most recent period.

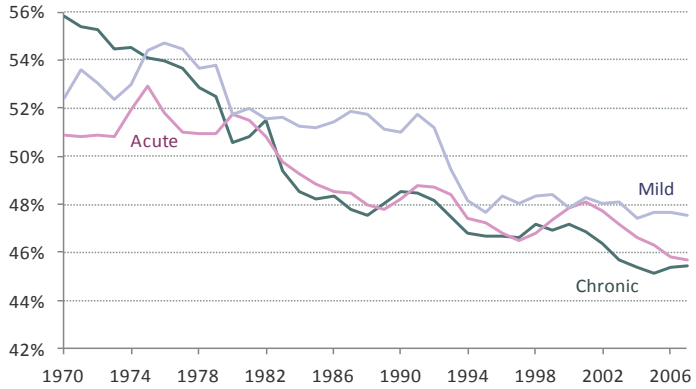
Table 4: Changes in total wage pot as a proportion of GVA in a selection of countries: 1970 - 2008

	Wage pot share in 1970[2]	Direction and magnitude of travel[1]				Wage pot share in 2007[2]	Percentage point change
		1970s	1980s	1990s	2000s[2]		
Consistently weak relationship between economic growth and median pay (chronic breakdown)							
US	57%	↓↓	↓↓	↑	↓↓	49%	-7.4%
Australia	46%		↓↓	↓↓	↓↓	39%	-7.6%
Canada	55%	↓↓	↑	↓↓	↓	48%	-6.8%
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)							
France	43%	↑↑	↓↓	↑	↓	42%	-0.5%
UK	59%	↓↓	↓↓	↓↓	↓↓	50%	-9.2%
Germany	50%	↑↑	↓↓	↓↓	↓↓	45%	-5.7%
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)							
Japan	46%		↓↓	↑↑	↓↓	44%	-2.4%
Finland	49%	↓	↑↑	↓↓	↑↑	45%	-3.6%
Denmark	56%	↑↑	↓	↓	↑↑	60%	+4.3%
Sweden	48%			↓↓	↓↓	46%	-1.3%

Notes: [1] Compares wage pot share at the beginning and end of the decade. ↑ and ↓ denote movement of less than 1 percentage point; ↑↑ and ↓↓ denote larger movements.
[2] Earliest data is 1993 for Sweden and 1980 for Australia and Japan. 2007 is used as the end point in this table in order to remove the temporary effects of the recent recession on labour share element of the equation. Exceptions are Germany and Finland, where 2008 is used because recession did not start until the following year.

Source: OECD Stat

Figure 5: Average wage pot shares of GVA within each median wage performance group: 1970 - 2007



Notes: Lines represent un-weighted averages of the wage pot shares recorded in the countries within each group. In each group, averages are omitted in years where data is available for fewer than half of the constituent countries. As with Table 4, the time series end in 2007 despite the availability of more recent data, in order to remove the temporary effects of the recent recession on labour share element of the equation. For a fuller discussion of the data in each country, see the Technical Annex.

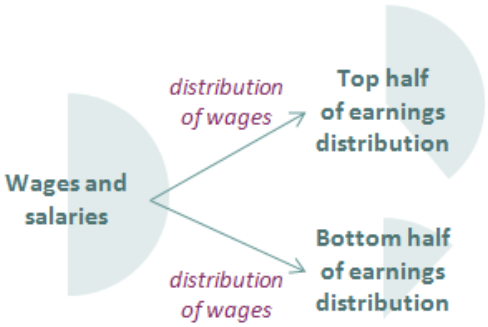
Sources: OECD Stat; Statistics Sweden

These findings suggest that aggregate level pay trends may indeed form part of the explanation for the breakdowns in relationships between median pay and economic growth that we have observed, and Figure 5 shows that average wage pot shares declined most sharply over the period in the *chronic* group.

However, a variety of anomalies, such as recent increases in total wage pot shares in Denmark and Finland that contrast with *mild* deterioration in median wage performance, and the relatively flat total pay share recorded in France that contrasts with an *acute* deterioration at the median, mean that this explanation alone is insufficient.

2.5 The distribution of the total wage pot

We must therefore look finally at the third stage of the GVA equation set out above (and repeated on the right).



As noted in the previous section, we have identified elsewhere that around one-third of the decline in the share of GVA accounted for by workers in the bottom half of the UK earnings distribution over recent decades resulted from the total wage pot effects associated with falling labour share and wage share.

While this highlights the importance of such economy wide changes, the clear implication is that a much larger part of the explanation rests on changes in the *distribution* of pay.

Figure A4 in the Technical Annex sets out trends in wage dispersions among full-time employees in each of the ten countries. The 90-10 ratio shows how the pay of workers at the 90th percentile (the top) compares to the pay of those at the 10th (the bottom): the higher the ratio, the more unequal is the pay distribution between top and bottom.[11] Similarly, the 90-50 ratio compares the 90th percentile with the median, while the 50-10 ratio divides wages at the median by those at the 10th percentile.

[11] For example, a 90-10 ratio of 2 would mean that workers at the 90th percentile of the earnings distribution were paid twice as much as those at the 10th percentile.

Note, while consideration of the 90-10 ratios highlights general levels of pay inequality in each of the countries, in terms of explaining the varying *median* wage performances identified in Chapter 1, the 90-50 and 50-10 ratios have most relevance. For example, growth in inequality between the top and the middle (an increasing 90-50 ratio) and/or reduction in inequality between the middle and the bottom (a decreasing 50-10 ratio) would mean that a falling share of the total wage pot is making its way to the middle, helping to explain a breakdown in the relationship between growth and median earnings. Conversely, a falling 90-50 and/or an increasing 50-10 ratio would be likely to improve the growth rate of median earnings relative to GDP per capita.

Table 5 provides a summary, and highlights similarities and differences across the three median wage performance groups we have established. Three main findings are worth noting.

- First, **the overall levels of wage inequality recorded at the end of the period were highest in those countries with the weakest relationships between median wages and economic growth**. The US recorded the highest dispersion on each of the measures at the end of the period, with Australia ranked second on the 90-50 ratio and Canada second on the 90-10 and 50-10 ratios. The UK was third-placed in relation to the 90-10 and 90-50 ratios, while Germany had the third highest 50-10 differential and France was fourth in terms of the 90-50 ratio (although much lower ranked on the other measures which points to a relatively small gap between the middle and the bottom). Conversely, pay dispersions were generally lower in those countries in which median wages more closely tracked GDP per capita.

- Secondly, **90-10 and 90-50 ratios in the *chronic* and the *acute* groups tended to move in the same direction**, with the top moving away from both the middle and the bottom in recent decades in the US, Australia, Canada and the UK (although France and Germany represent significant exceptions). By contrast, the picture in the *mild* group has been much more mixed, with gaps tending to fluctuate over the course of the period.

- Thirdly, **no consistent 50-10 ratio patterns can be observed**. The middle moved away from the bottom in the 1990s and 2000s in the US, Germany, Denmark and Sweden, but the bottom gained ground on the middle in Australia, Canada, the UK, Japan and France.

Averages for the three pay dispersion ratios considered here are set out for each median wage performance group in Figure 6. On each measure, average pay inequality has been highest within the *chronic* group and lowest in the *mild* group, highlighting the importance of pay dispersion to the relationship between growth and gain.

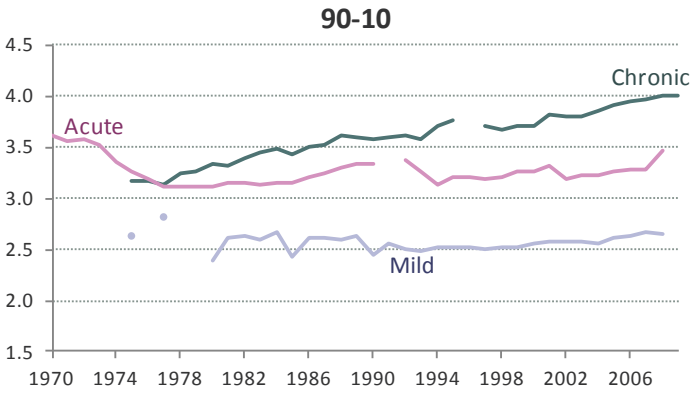
Table 5: Changes in wage dispersion ratios in a selection of countries: 1970 - 2009

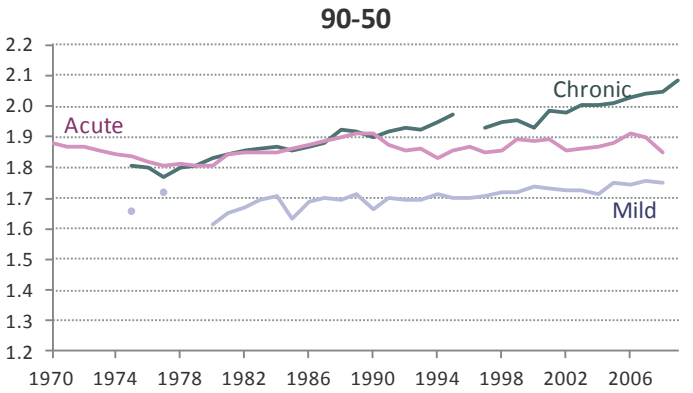
	Direction and magnitude of travel[1]				Ratio in	Rank (highest
	1970s	1980s	1990s	2000s[2]	2009[2]	to lowest)
Consistently weak relationship between economic growth and median pay (chronic breakdown)						
US						
90-10	↑	↑↑	↑	↑↑	5.0	1
90-50	↑	↑↑	↑	↑↑	2.4	1
50-10	↑	↑	↑	↑	2.1	1
Australia						
90-10	↑↑	↑	↑↑	↑↑	3.3	4
90-50	↑	↑	↑↑	↑↑	2.0	2
50-10	↑↑	↑	↓	↓	1.7	5
Canada						
90-10			↑	↑	3.7	2
90-50			↑	↑↑	1.9	5
50-10			↑	↓	1.9	2
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)						
France						
90-10	↓↓	↑	↓↓	↓↓	2.9	7
90-50	↓	↑	↓	↑	2.0	4
50-10	↓↓	↓	↓	↓↓	1.5	8
UK						
90-10	↓↓	↑↑	↑	↑	3.6	3
90-50	↓	↑↑	↑	↑	2.0	3
50-10	↓↓	↑	↓	↓	1.8	4
Germany						
90-10			↓↓	↑	3.3	5
90-50			↑	↓↓	1.7	9
50-10			↓↓	↑↑	1.9	3
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)						
Japan						
90-10	↓	↑↑	↓↓	↑	3.0	6
90-50	↓	↑↑	↑	↑	1.8	6
50-10	↓	↓	↑	↑	1.6	6
Finland						
90-10	↓↓	↑	↓↓	↑↑	2.6	9
90-50	↓	↑	↓	↑	1.8	7
50-10	↓↓	↑	↓	↑	1.5	9
Denmark						
90-10		↑	↑↑	↑↑	2.7	8
90-50		↑	↑↑	↑	1.7	8
50-10		↓	↑↑	↑↑	1.6	7
Sweden						
90-10			↑↑	↑	2.0	10
90-50			↑↑	↑	1.6	10
50-10			↑	↑	1.3	10

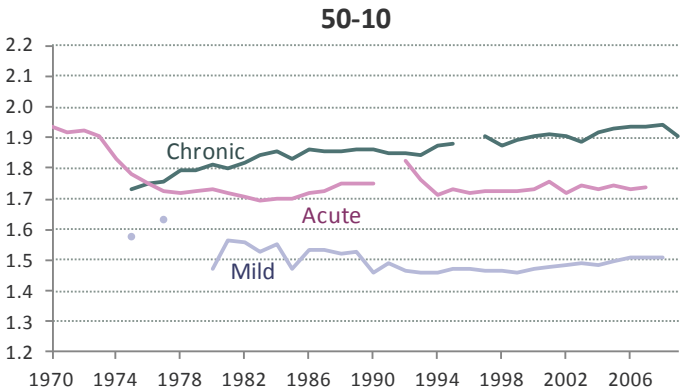
Notes: [1] Compares ratio at the beginning and end of the decade. ↓ and ↑ denote movement of less than 5 per cent; ↓↓ and ↑↑ denote larger movements.
[2] 2008 in Germany, Finland and Denmark; 2007 in France.

Source: OECD Stat

Figure 6: Average pay ratios within each median wage performance group: 1970 - 2009







Notes: Lines represent un-weighted averages of the ratios recorded in the countries within each group. In each group, averages are omitted in years where data is available for fewer than half of the constituent countries. In relation to the acute group, 90-10 and 50-10 figures are withheld in 1991, in order to remove the temporary effects of reunification in Germany. For a fuller discussion of the data in each country, see the Technical Annex.

Sources: OECD Stat; Statistics Sweden

In relation to the 90-10 ratio, differences between the groups grew over time. That is, pay inequality increased steadily within the *chronic* group, rose less markedly in the *acute* group (following an initial decline during the 1970s) and remained relatively flat in the *mild* group.

As such, the spread across the three lines grew from just 0.6 in 1975 to 1.4 in 2008.

Looking more specifically at the median, the 90-50 ratio shows that the top tended to move away from the middle of the earnings distribution in all three groups, but that the increase was again most noticeable for the *chronic* group, with both the *acute* and *mild* groups displaying relatively flat trends from the late 1980s onwards.

Again the spread between the ratios doubled over the period, from 0.1 in 1975 to 0.2 in 2008.

While it is difficult to discern a standard pattern across the group of ten countries in relation to the 50-10 ratio, the chart on the left throws up a clearer distinction when we look at the level of the three groups.

As with the 90-50 ratio, it rose consistently in the *chronic* group and remained relatively flat in the *acute* group. In this instance, the ratio appeared to fall slightly in the *mild* group (although it edged back upwards during the last decade).

2.6 Trends in employment

So far our focus has been on trends in median pay, but it could be argued that countries that have performed better on this measure have done so at the expense of employment. That is, there may be an important wage/employment trade-off that we have not yet recognised.

To consider this possibility, Figure A5 in the Technical Annex sets out unemployment rates in each of the ten countries over the period 1970-2010 and Figure A6 details ratios of employment to working-age population. Table 6 and Table 7 in this section provide summaries.

Table 6 shows that unemployment rates have been on a long upward trend across most of the countries considered, although levels did fall over the course of the 2000s in Australia, Germany and Finland.

Table 6: Changes in unemployment rates in a selection of countries: 1970 - 2010

	Direction and magnitude of travel[1]				Unemployment	Rank (highest
	1970s	1980s	1990s	2000s	rate in 2010	to lowest)
Consistently weak relationship between economic growth and median pay (chronic breakdown)						
US	↑↑	↓	↑↑	↑	9.6%	2
Australia	↑↑	→	→	↓	5.2%	9
Canada	↑↑	→	↓	↑↑	8.0%	5
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)						
France	↑↑	↑↑	↑↑	↑	9.8%	1
UK			↓	↑↑	7.8%	6
Germany		↑↑	↑↑	↓	7.1%	8
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)						
Japan	↑↑	↑	↑↑	↑	5.1%	10
Finland	↑↑	↓↓	↑↑	↓↓	8.4%	3
Denmark				↑↑	7.4%	7
Sweden	↑	↓	↑↑	↑↑	8.4%	3

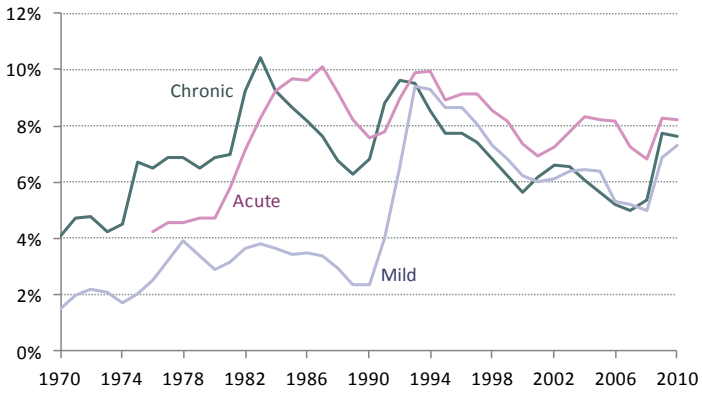
Notes: [1] Compares unemploymenr rates at the beginning and end of the decade. ↑ and ↓ denote movement of less than 1 percentage point; ↑↑ and ↓↓ denote larger movements.

Source: ILO, *Labour Statistics Database* ; ONS, *Labour Market Statistics* , Table A.10; Australian Bureau of Statistics

There is some evidence to suggest that unemployment *has* been more of a problem in those countries with the lowest levels of 50-10 inequality, with France in particular experiencing consistently strong growth in unemployment, and Finland and Sweden both recording relatively high rates in 2010.

However, the experiences of the US and Japan suggest that any wage/unemployment trade-off is far from straightforward. For example, despite increasing consistently across the four decades considered, Japanese unemployment rates remained the lowest of all ten countries in 2010. Conversely, the US recorded the second highest level of unemployment in 2010 despite having the highest levels of pay inequality. While the US situation is largely the product of a particularly sharp increase in unemployment associated with the global recession of 2008-09, Figure A5 shows that the US level had been edging towards the average of the ten countries considered in this report for some time before this downturn.

Figure 7: Average unemployment rates within each median wage performance group: 1970 - 2010



Notes: Lines represent un-weighted averages of the unemployment rates recorded in the countries within each group. In each group, averages are omitted in years where data is available for fewer than half of the constituent countries. For a fuller discussion of the data in each country, see the Technical Annex.

Sources: ILO, *Labour Statistics Database*; ONS, *Labour Market Statistics*; Australian Bureau of Statistics

Figure 7 presents averages across our three median wage performance groups.

It shows that rates have tended to move in line with each other, reflecting the global nature of business cycles, and have edged upwards in all three clusters.

Unemployment rates in the *mild* countries increased particularly sharply during the early 1990s recessions, but they started from a significantly lower base. As such, the spread of average rates across the three groups converged over the period and stood at just 0.9 percentage points in 2010.

The picture is also mixed in relation to *em*ployment. Again we can point to *some* evidence of a potential trade-off. Table 7 shows that the proportion of the working-age population in employment tended to rise over much of the period in the *chronic* group of countries, but fell for long periods in the *acute* group (particularly France) and in Japan.

Table 7: Changes in employment/working-age population ratios in a selection of countries: 1970-2010

	Direction and magnitude of travel[1]				Employment ratio in 2010[2]	Rank (highest to lowest)
	1970s	1980s	1990s	2000s[2]		
Consistently weak relationship between economic growth and median pay (chronic breakdown)						
US	↑↑	↑↑	↑↑	↓↓	58.5%	6
Australia	↓↓	↑↑	↓	↑↑	63.0%	1
Canada	↑↑	↑↑	↓	↑	62.3%	2
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)						
France	↓↓	↓	↓↓	↓	51.2%	10
UK	↓	↑↑	↑	↓↓	58.2%	7
Germany	↓↓	↓↓	↓	↑↑	53.9%	9
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)						
Japan	↓↓	↓	↓↓	↓↓	56.2%	8
Finland		↑↑	↓↓	↑↑	61.3%	3
Denmark				↑↑	60.3%	4
Sweden	↑↑	↑	↓↓	↓	59.3%	5

Notes: [1] Compares ratios of employment to working-age population at the beginning and end of the decade based on consistent US definitions. ↑ and ↓ denote movement of less than 1 percentage point; ↑↑ and ↓↓ denote larger movements.

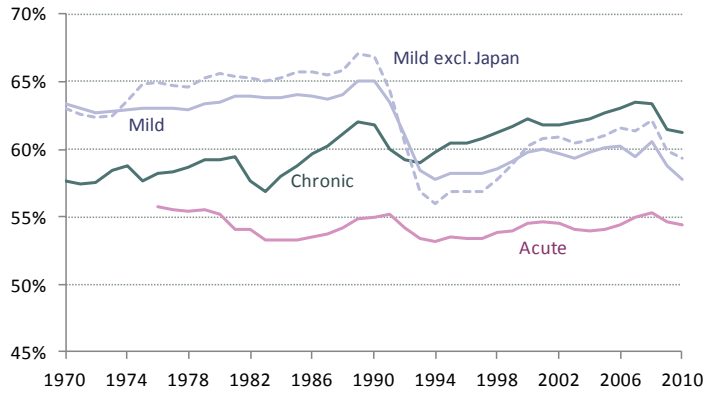
[2] Earliest data is 1981 in Finland and 2004 in Demark. Latest data is 2005 in Finland and 2009 in Denmark.

Source: Bureau of Labor Statistics, *International Labour Comparisons* ; ILO, *Labour Statistics Database*

In the Scandinavian members of the *mild* group however, employment increased steadily either side of the massive reductions associated with the early 1990s recessions.

Any theory of a wage/employment trade-off is further thrown into question by two significant changes in the 2000s: namely the end of the steady march of employment growth in the US and the reversal of the German decline. In both instances, the shifts occurred *before* the start of the global recession in 2008-09.

Figure 8: Average employment-population ratios within each median wage performance group: 1970 - 2010



Notes: Lines represent un-weighted averages of the ratios of employment to working-age population recorded in the countries within each group. In each group, averages are omitted in years where data is available for fewer than half of the constituent countries. For a fuller discussion of the data in each country, see the Technical Annex.

Sources: Bureau of Labor Statistics, *International Labour Comparisons*; ILO, *Labour Statistics Database*

These findings are highlighted in Figure 8, which presents average employment to working-age population ratios in each of our three median wage performance groups.

It shows that employment tended to rise in the *chronic* group (with business cycle fluctuations), remained flat in the *acute* group and fell overall in the *mild* group.

However, if Japan and its lost decade are removed from the *mild* average, then the position appears somewhat different. In this instance, the average employment ratio in the *mild* group (which now consists of the three Scandinavian countries) grows on either side of the early 1990s recession in line with the average *chronic* ratio.

Therefore rather than identifying employment outcomes that are directly linked to median wage performance or levels of pay dispersion, what this analysis suggests is that variations are instead associated with underlying market economy models. The Scandinavian models, with their relatively low levels of pay inequality, appear to be just as effective at generating employment growth as the more flexible but more unequal models of the US, Australia and Canada, but the Continental models of France and Germany have performed much less well.

2.7 Conclusion

Taken together, the findings set out in this chapter suggest that, as we have already observed in relation to the UK, the increasing disconnect between economic growth and the pay of ordinary workers in advanced economies is a product of trends in all three of the factors we have considered: that is, declines in both *labour shares of income* and *wage shares of employee compensation* and increases in *pay inequality*. Those countries in which the phenomenon of growth without gain has been most marked are those in which these three trends have been most evident.

Table 8 provides a summary of the experiences of each of the ten countries.

Table 8: Summary of country findings: 1970 - 2010

	Labour share of income	Wage share of employee compensation	Wage pot share of gross value added	Distribution of wages
Consistently weak relationship between economic growth and median pay (chronic breakdown)				
US	Declined slightly, with relatively big fall in 2000s	Significant decline, with big falls in 1970s and 2000s	Significant decline over period, including latest decade	Highly uneven; top-middle and middle-bottom gaps grown
Australia	Significant decline, particularly at start of period	Steady and sizeable fall, with biggest drop in 1980s	Steady decline since 1980s, with lowest final share	Top-middle gap grown, but middle-bottom gap narrowed
Canada	Long-run downward trend, with fluctuations	Steady decline in recent decades	Significant decline over period, primarily in 1980s	Top-middle gap grown, but middle-bottom gap narrowed
Recent and sharp deterioration in relationship between economic growth and median pay (acute breakdown)				
France	Relatively flat, with little movement in recent decades	Decline over period, but increases in 1990s and 2000s	Slight fall over period, with no clear pattern over time	Top-middle gap flat; middle-bottom gap narrowed
UK	Steady downward trend since 1970s oil crisis peak	Significant decline, with big falls in 1970s and 2000s	Largest recorded fall, evenly spread across decades	Top-middle gap grown, but middle-bottom gap narrowed
Germany	Steady fall from 1980s onwards	Decline over period, but slight increase in 2000s	Increase in 1970s more than offset by susbequent falls	Top-middle gap narrowed and middle-bottom gap grown
Recent and mild deterioration in relationship between economic growth and median pay (mild breakdown)				
Japan	Significant increase over period, but decline in 2000s	Steady fall, with biggest drop in 1980s	Small decline over period; relatively flat in 2000s	Top-middle gap grown slightly; middle-bottom gap narrowed
Finland	Increase in 1970s and 1980s, fall thereafter; flat overall	Significant decline over period, but large increase in 2000s	Overall decline, but improvement in 2000s	Top-middle and middle-bottom gaps broadly flat
Denmark	Significant increase over period, particularly in 2000s	Steady decline, but retains highest wage share in group	Only country to increase over period	Top-middle and middle-bottom gaps grown, but still low
Sweden	Steady decline from 1980s onwards	Increases in 1990s and 2000s, but from low starting point	Decline in 1990s and 2000s	Top-middle and middle-bottom gaps grown, but still low

It shows that, across the three groups, some underlying trends have been universal, while others are more particular:

- First, ***labour share of income*** **generally fell over the period in the *chronic* and *acute* countries , but increased in the *mild* ones** (the exceptions to these trends being France and Sweden);
- Secondly, ***wage share of employee compensation*** **fell in most countries**;
- Thirdly, as a result of these movements, ***total wage pots*** **accounted for a declining share of gross value added in all countries other than Denmark**, with the *chronic* and *acute* countries (other than France) experiencing the biggest falls and the *mild* countries displaying broadly flat or improving trends; and
- Finally, **countries in the *chronic* and *acute* groups recorded higher levels of *pay inequality* than those in the *mild* group**. Economies in the former groups were also more likely to experience both growth in the gap between pay at the top and the middle (other than France and Germany) and narrowing of the gap between the middle and the bottom (other than the US and Germany).

While such similarities of outcome can be identified however, the *causes* of the observed trends may differ from country to country. In addition, it is not clear why some countries within the same median wage performance groups have undergone such different labour share, wage share and pay distribution trends. In order to provide a fuller explanation of our findings, we consider in the next chapter the specific economic and policy environments that have underpinned the changes in relationships between growth and the pay of ordinary workers in each of the countries.

3 Economic and policy environments

In Chapter 1, we described the relationship between economic growth and median wages over time in each the ten countries. We then considered what had driven the different median wage experiences in Chapter 2, by setting out trends in the various elements that connect GDP to pay. In this chapter we provide context for our various findings by providing a brief overview of the economic and policy environments which may explain these different patterns.

3.1 Explaining growth without gain

As we touched on in *Missing Out*, there is a significant academic literature that attempts to assign causation for the growing gap between the rewards enjoyed by higher earners and ordinary workers in a range of advanced economic to a number of factors.[12] Four explanations carry particular weight:

- First, evidence in a number of countries suggests that the development of technology, particularly computerisation and automation, has in recent decades increased the productivity of, and the demand for, high-skilled labour (so-called **skills-biased technological change**). At the same time, it has served to replace some of the more automated roles previously carried out by low- and medium-skilled workers (such as assembly line production and routine clerical work). As such, the wage premium associated with education has grown, even as the supply of graduates has increased.[13]

- A second, more contested theory suggests that lower skilled workers in advanced economies have been further disadvantaged by the growth of **international trade**, which has enabled and encouraged the outsourcing of a number of routine and low- and mid-skilled tasks to emerging markets.[14]

- A third factor is the intensification of the pursuit of **shareholder value** and the associated decline in the emphasis placed on worker rewards. This shift is connected to the increased inclusion of stock options in the compensation packages of managers, which has re-written incentives for executives and ensured that their goals have become more closely aligned with those of company owners.[15]

- Tied to this development is a fourth element, namely changes in the **collective bargaining power of labour**, which is argued to have a particularly strong effect on wage inequality at the bottom and in the middle of the earnings distribution.[16]

[12] For a comprehensive overview of these arguments, see Levy, F and Kochan, T, *Addressing the Problem of Stagnant Wages*, Employment Policy Research Network, March 2011

[13] See for example, Goos, M and Manning, A, *Lousy jobs and lovely jobs: the rising polarization of work in Britain*, Centre for Economic Performance, London School of Economics, 2005

[14] For an account of this argument, see Anderton, B and Brenton, P, "Outsourcing and Low-Skilled Workers in the UK" *Bulletin of Economic Research*, Vol. 61 (4), 1999, pp. 267-285

[15] This explanation is espoused in, Gordon, Robert J, *The Demise of Okun's Law and of Procyclical Fluctuations in Conventional and Unconventional Measures of Productivity*, NBER, 2010

[16] Machin and Van Reenen show for example that there is a correlation (though not necessarily *causation*) between countries with strong union power and/or a 'decent' minimum wage and 'stable' levels of inequality. Machin, S and Van Reenen, J, *Changes in Wage Inequality*, Special Paper No. 18, Centre for Economic Performance, LSE, 2007

While it is probable that each of these factors has influenced median wage outcomes in the ten countries we consider to some extent, the magnitude – and maybe even the direction – of effect is likely to have varied. That is, while all of the countries we have considered fall into the economically advanced bracket and are exposed to broadly the same technological and international forces, they have displayed differences in levels of intervention in the functioning of their economies and in wage-setting processes. We touch on some of the differences in approach below.

3.2 Country experiences

Chronic breakdown countries

Not surprisingly, much of the literature on skills-biased technological change that we discussed above draws on experiences in the **US**, with growth in the wage premiums associated with education cited as the primary driver of growing inequality in pay.[17] Institutional factors have also played their part. For example, Fortin and Lemieux have argued that growth in inequality during the 1980s was a product of a more than 80 per cent reduction in the real value of the minimum wage and economic deregulation,[18] while Western and Rosenfeld have estimated that declining union membership accounted for one-fifth of the increase in hourly wage inequality among men in the period 1973-2007.[19]

Similar conditions are evident in **Australia**. For example, Belchamber has pointed to a 'vanishing bottom' in relation to jobs in the 1980s,[20] while Borland has highlighted the importance of returns to education and the role played once again by skill-biased technological change.[21] A number of changes to industrial regulation and wage-setting processes are also likely to be relevant: in particular the introduction of the *Prices and Incomes Accord* in 1983, which was based on the notion that trade unions would agree to wage moderation in return for employment growth, and the later arrival of *Enterprise Bargaining Agreements* (1993) and *Australian Workplace Agreements* (1996). These measures all contributed to a shift from a regulated quasi-judicial system of industrial relations mediation (undertaken by the Australian Industrial Relations Commission, AIRC) to a largely decentralised model with lower levels of labour protection. In 1990, AIRC negotiations covered over two-thirds of Australian employees; by 2004, the proportion had dwindled to less than one-quarter.[22]

It is a similar picture in **Canada**. Again declining wage bargaining power was in evidence, with unionisation falling steadily from the 1990s onwards, alongside product and labour market deregulation. As in the US and Australia, Saez and Veall have noted that those households at the very top of income distribution have accounted for a disproportionate share of the total increase in income in Canada in recent years. The share flowing to the top one per cent of households increased from 5 per cent in 1970 to 10 per cent in 2000, while the share accounted for by the top 0.1 per cent

[17] For example, see Autor, D, Levy, F and Murnane, R "The Skill Content of Recent Technological Change: an empirical exploration", *Quarterly Journal of Economics*, 2003
[18] Fortin, N and Lemieux, T "Institutional wages and rising wage inequality: is there a linkage?", *The journal of economic perspectives*, 1997
[19] Western, R and Rosenfeld, J "Unions, Norms and the Rise in U.S. Wage Inequality", *American Sociological Review*, August 2010
[20] Belchamber, G *Disappearing Middle or Vanishing Bottom?: Job Growth in Australia Under the Award*, ACTU, 1995
[21] Borland, J *Earnings Inequality in Australia: Changes, causes and consequences*, University of Melbourne, 1999
[22] OECD, *Wage setting institutions and outcomes*, 2004

rose from 1.0 per cent to 4.3 per cent.[23] They argue that a particularly Canadian explanation for this growth in pay at the very top was the threat of losing workers to the US, where the phenomenon started earlier.

Clearly, the three countries in this group are characterised by large, market orientated economies with significant labour market flexibility. They are also similar in terms of their size and their access to natural resources. As such, they have been particularly affected by commodity price booms in recent decades. These have had the effect of both directly increasing profits (and therefore reducing labour shares) in resource related industries and shifting employment towards the commodity producing industries experiencing the biggest gains in profit share.

Similarly, labour rewards within each of the countries have moved in the same direction over the period, away from direct pay and towards non-salary compensation (thereby reducing wage shares). For example, health insurance payments by US employers on behalf of their employees have become a more important part of the labour compensation package.[24] In Canada, the increase in non-salary rewards has been driven by growth in a variety of employer contributions, including health, dental, disability and life insurance plans, though the biggest single factor has been the rise in the rate of employer contributions to the Canada and Quebec Pension Plans, from 1.8 per cent in 1986 to 4.95 per cent by 2003.[25]

Acute breakdown countries

Our second group of countries, those in which median wages have dramatically fallen behind economic growth in the most recent decade, appear less homogeneous than the first. Although all three are western European and of roughly similar size, the UK economy is in many regards closer in design to the US model than the Continental one, and pay dispersion has been moving in opposite directions in France and Germany. It is possible that each of these countries has reached the same median wage outcome, but for slightly different reasons.

We have considered the **UK** context in some detail in previous reports, most noticeably *Missing Out*, so we will not spend much time looking at it again here. It is worth reiterating, however, that the main driver of the growth in the gap between GDP and the pay of ordinary workers over a number of decades has been widening pay inequality. The particularly sharp decline in the relationship in the 2000s that we have identified in this report appears to be a product of rapid growth in wages at the very top of the earnings distribution; *above* the 90th percentile. Hence, the distribution of pay across the bottom 90 per cent of the population narrowed somewhat during the decade, which slightly improved the position of those at the bottom relative to those in the middle. But, a disproportionate share of the proceeds of growth flowed to the very highest earners, many of whom worked in the finance sector and were in receipt of substantial bonuses.

[23] Saez, E and Veall, M "The Evolution of High Incomes in North America: Lessons from Canadian Evidence", *American Economic Review*, Vol 95 No. 3, 2005, pp831-849
[24] Mishel, L, Bernstein, J and Shierholz, H *The State of Working America 2008/2009*
[25] CSLS Research Report No. 2008-8, *The Relationship between Labour Productivity and Real Wage Growth in Canada and OECD Countries*, December 2008

The situation in **France** has been very different and is worth slightly longer consideration here.[26] It is difficult to explain the French experience with reference to changes in labour and wage shares: the labour share of income fell only marginally during the 2000s while the wage share *increased* slightly, meaning that the overall wage pot as a share of GVA was largely unchanged.

A clue as to what happened can be found by considering pay dispersion trends. While both the 90-10 and 50-10 ratios shrank, the 90-50 ratio remained steady, implying that the earnings distribution became more compressed because of improvement in pay at the bottom relative to all other earners. In short, a larger share of GDP than was previously the case flowed to workers at the bottom of the distribution rather than those in the middle. Therefore, unlike in most of the other countries set out here, the relatively poor performance of median pay in France appears to be a product of a substantial improvement in outcomes for the lowest paid, rather than a concentration of the proceeds of growth in the hands of the highest earners.

A variety of statistics add weight to this account. For example, in the decade to 2005 the proportion of employees below the low pay threshold[27] in France fell, with just 11 per cent in this position at the end of the period compared with 22 per cent in the UK and 25 per cent in the US.[28] Similarly, while the real value of the US federal minimum wage declined significantly between 1970 and 2005, the French minimum wage doubled in real terms.[29] This has come about in part because the French minimum wage (SMIC) is legally indexed to consumer prices and (partially) to the growth of hourly wages among blue-collar workers (rather than subject to an annual political decision).[30]

Collective wage agreements are also likely to have been important. As in many of the other countries considered here, trade union density has been falling in France, and currently stands at less than 10 per cent. Despite this, wage bargaining coverage has been *increasing*. Bosch, drawing on European Commission data, shows that more than 90 per cent of French employees are subject to collective agreements.[31] Paradoxically, this has come about in part because poor industrial relations, both among unions and between unions and management, mean that the state has imposed agreements in the face of a breakdown in negotiations.

Unlike in the UK and France, the *acute* deterioration taking place in the 2000s in the relationship between GDP per capita and median wages in **Germany** appears to be primarily the product of a rapidly declining labour share rather than changes in pay inequality. Recent trends in the 90-50 and 50-10 ratios show that, in contrast to most other countries, workers in the middle of the earnings distribution in Germany have both *closed* the gap on those at the top and moved *further away* from those at the bottom (corresponding with increasing lower-end *income* inequality over the same

[26] It should be noted that, as we identify in Chapter 1 and the Technical Annex, the French data relates to private sector workers only and may therefore misrepresent economy wide trends somewhat.
[27] Defined as being less than two-thirds of the national median of gross hourly wages.
[28] Bosch, G, *Low Wage work in five European countries and the US*, p3
[29] Caroli, E and Gautié, J, "Low-Wage Work: The Political Debate and Research Agenda in France", *Low Wage Work in France* p18
[30] Bosch, G, *Low Wage work in five European countries and the US*, p12
[31] *Ibid.* p10

period[32]). The implication of this finding is that wage performance has been even more divorced from economic growth for the lowest paid workers.

In part, this situation represents continuing fallout from unification of the country at the start of the 1990s. Prior to this, West German workers enjoyed the highest wages in the world. However, following the economic difficulties associated with unification and in reaction to rising inflation, the German economy came to rely heavily on strong wage moderation. This shift has helped the country to maintain a competitive export position over the last decade, with unit labour costs falling by around one-fifth compared with its major trading partners,[33] but it has also reduced the share of GDP flowing to labour rather than profits.

As such, the erosion of labour market institutions and reductions in the minimum wage that had characterised the US economy in the 1980s migrated to Germany in this later period (Germany has no national minimum wage but union contracts in Germany specify wage levels for defined groups in specific sectors, creating a complex system of wage floors[34]), resulting in a fall in the number of workers covered by trade union agreements from 87 per cent in 1995 to 73 per cent in 2004.[35] Dustmann, Ludsteck and Schönberg suggest that this de-unionisation explains more than one-quarter of the increase in lower-tail inequality in the period, with wages at the 5th percentile standing 5.5 per cent lower in 2007 than they would have been if unionisation rates had not fallen from their 1995 level.[36]

Mild breakdown countries

The four economies comprising our third group, in which median wages grew more slowly than GDP per capita during the 2000s but to a significantly lesser extent than in the other countries considered here, display a number of similarities along with some very important differences.

Three of the countries, Finland, Denmark and Sweden, are built on a similar social democratic model, yet recorded differing movements in labour share, wage share and pay dispersion. Crucially perhaps, the three countries share an openness to trade, meaning they are particularly susceptible to the pressures of globalisation. But, despite increases in recent years, all three continue to record internationally low levels of pay inequality, helping to mitigate the effects of these wider economic pressures.

All three faced economic difficulties in the early 1990s, but the magnitude and pace of their slowdowns and recoveries varied somewhat. **Finland** in particular experienced a very deep recession and associated banking and currency crisis in the first half of the 1990s, exacerbated by the collapse of the country's main export market (the Soviet Union), during which unemployment grew five-fold to 15 per cent.[37] Much of its subsequent pay performance was therefore defined by the shape of its recovery and by a restructuring of the economy towards new technology and telecommunications in

[32] German Institute for Economic Research (DIW), "The Shrinking German Middle Class – Signs of Long-Term Polarization in Disposable Income?" *Weekly Report*, No 4/2008, May 2008
[33] http://ec.europa.eu/economy_finance/een/009/article_6471_en.htm
[34] Dustmann, C, Ludsteck, J and Schönberg, U, *Revisiting the German Wage Structure*, IZA Discussion Paper Series, March 2007, p17
[35] *Ibid.* p4
[36] *Ibid.* p18
[37] Piekkola, H, *From creative destruction to human capital growth: Wage dispersion effects in Finland*, ETLA, 2002

particular.[38] For example, the ratio of job vacancies to the number of unemployed increased in the aftermath of the recession as those who had lost their jobs in manual trades struggled to find appropriate employment elsewhere.[39] The failure to return such workers to the labour market means that Finland continues to record a relatively high level of structural unemployment, which dampens wage settlements for workers in the lower half of the pay distribution and helps to explain the rapid widening of pay dispersion in the country during the 2000s.

In **Denmark**, as in Finland, a programme of economic liberalisation during the 1980s contributed to an initial boom, but also to a subsequent slowdown during the 1990s. The Danish economy avoided the depth of recession observed in Finland, but growth was low for a number of years, producing a similar dampening effect on wages. Although the economy recovered from the mid 1990s, kick-started to some extent by a moderate fiscal expansion, pay inflation among ordinary workers remained subdued. As such, pay inequality rose significantly over the course of the 1990s and 2000s, with the incidence of low pay employment being around twice as high in Denmark (12 per cent of all workers) as in Finland[40] (although this is still only about half the level of the US). That this effect did not produce a more severe disconnect between GDP and median pay is down to growth in labour share in the 1990s and 2000s, perhaps due in part to an increase in unionisation.

The experience in **Sweden** has been subtly different. Although recession in the early 1990s once again produced a substantial increase in unemployment and a subsequent failure of recovery in low skill employment opportunities, the *mild* deterioration in the relationship between median pay and economic growth in Sweden occurred not just because of an increase in pay dispersion but also because of a general decline in the total wage pot relative to GDP. That is, unlike in Finland and Denmark, macroeconomic trends served to reduce relative labour rewards for *all* workers in Sweden, rather than just those in the middle.

These trends are once more associated in part with skills-biased technical change, but the declining bargaining power of workers since the 1990s should also be noted. Prior to this decade, wages were collectively set by unions and employers. However, a breakdown in negotiations between the Swedish Employers Federation and the Swedish Trade Union Confederation sparked a decentralisation of wage-setting to the industry and company level. In 1992, this more diversified collection of unions signed the *Rehnberg Agreement*, lowering wage levels in part to enable Swedish exports to become competitive.

The fourth country in this group, **Japan**, is entirely different again. Both the level of state intervention in the economy and pay dispersion levels bear comparison with the Scandinavian nations, but the size of the Japanese welfare state is very much smaller. In relation to the various measures we have focused on in this report, Japan is characterised by a lack of change. Despite some fluctuation, labour share was broadly flat from the 1980s onwards and, while wage share declined, it remained the third highest among the countries detailed here at the end of the period. As a result, wages declined as a share of GDP between 1980 and 2008 in Japan, but only slightly.

[38] Asplund R, Barth E, Lundborg P, and Nilsen KM, *Challenges of Nordic Labour Markets*, The Research Institute of the Finnish Economy, 2011
[39] Bank of Finland, *Bank of Finland Bulletin 3: Economic Outlook*, Vol.85, 2011
[40] ILO, *Global Wage Report 2010/11: Wage policies in times of crisis*, 2011, Table SA3

Measures of pay dispersion were also essentially static from the 1970s, with very minor reductions in gaps between the top and the bottom and the middle and the bottom.

The relative tranquillity of these indicators in recent years stands in contrast to the turmoil experienced by the wider Japanese economy. Having recorded phenomenal economic expansion in the post-war period, with annual growth averaging 10 per cent in the 1960s, 5 per cent in the 1970s and 4 per cent through the 1980s, the 'lost decade' of the 1990s produced an annual average of just 1.7 per cent.[41] As a result, while it remains relatively low, unemployment in Japan increased from 2.6 per cent in 1985 to 4.7 per cent in 2004.[42] Many of the pressures on low wage work that we identified in relation to the Scandinavian countries above are therefore likely to have been again been at play in Japan.

Similarly, in common with these same countries, the relatively low and steady levels of pay dispersion that helped mitigate these effects in Japan owe much to the industrial and political structure of the country, as well as cultural norms. The state frequently intervenes in the market, with two distinctive features of the post-war Japanese economy being the close co-operation between manufacturers, suppliers and distributors, known as *keiretsu*, and the guarantee of lifetime employment for a sizeable share of the labour force.[43] Since the 1970s most large firms have had relationships with single enterprise unions that represent both white- and blue-collar employees. Moriguchi and Saez argue that these structures probably reduce differentials between different workers, as well as limiting executive pay.[44] They suggest that this model helps explain one of the distinct characteristics of contemporary Japan, namely its low income inequality in the absence of government redistribution.[45]

However as we set out above, one important note in relation to the Japanese findings detailed in this paper is that the wage data does not cover 'irregular workers'. Numbers increased rapidly during the lost decade, such that by 2004 irregular workers accounted for close to one-third of the overall workforce, up from one-fifth in the early 1990s. These workers receive lower wages and fewer fringe benefits than regular counterparts, and typically work fewer hours as well: their omission from our analysis is therefore likely to downplay any detachment of median earnings from economic growth.[46]

3.3 Conclusion

This paper has examined international trends in order to illuminate the extent to which the decline of low to middle income Britain is an unfortunate, but largely unavoidable, fact of modern life in a global economy, and the extent to which it is the result of policy choices made over a number of years. We have addressed this question by looking at how effective a selection of advanced economies have been at sharing the proceeds of growth through wages. We have found that the relationship between median pay and per capita GDP growth has weakened in all the countries we have studied, but that the magnitude and duration of this breakdown has varied considerably.

[41] CIA, *World Factbook*
[42] Fujimura, M, "Social Change and Social Policy in Japan", *International Journal of Japanese Sociology*, 2009, Number 18, p12
[43] CIA, *World Factbook*
[44] Moriguchi, C and Saez, E, *The Evolution of Income Concentration in Japan, 1886-2005: Evidence from Income Tax Statistics*, July 2007, p24
[45] *Ibid*, p3
[46] Alexander, A, *The Arc of Japan's Economic Development*, 2008, p203

Some countries – the **US**, **Australia** and **Canada** – have experienced a *chronic* breakdown in the relationship between ordinary workers' pay and economic growth. Others – the **UK**, **France** and **Germany** – have recorded an *acute* one, just as severe as the breakdown identified in the first group but much more recently occurring. Finally, in a third group of countries – **Finland**, **Japan**, **Denmark** and **Sweden** – the breakdown in relationship can be considered *mild*.

Consideration of the various drivers at play in these three clusters of countries points to this report's key finding, namely that **wage inequality has been the main driver of differing median wage performance across a range of advanced economies**. Countries in which the link between economic growth and median pay has remained strongest (that is, the *mild breakdown* countries) have tended to record both the lowest levels of pay dispersion and the lowest rises over the period.

These same countries have also been less likely to experience a shift in the distribution of national income from workers to profits, though this factor appears less important, with evidence of a convergence in labour shares across all ten countries over the period considered. Links between economic output and pay have also been weakened in each country by growth in non-wage compensation, but this trend appears to have been universal.

Consideration of differing conditions within the countries in our *acute* group adds more nuance to these broad conclusions. The **UK appears to be following the pattern set by the US several decades ago**, with the timing of the relative deterioration at the middle stemming from a combination of rapid growth in pay at the very top of the earnings distribution, particularly in sectors like finance, and an improvement in wages at the bottom associated with the introduction of a minimum wage. Median workers in Germany have, by contrast, gained ground on those at the top in recent years while at the same time moving away from those at the bottom. Here the relative deterioration in median pay appears to be the product of a shift in the distribution of national income from workers to owners, which has occurred alongside a weakening of many of the country's labour market institutions and traditions. The French case is different again, with workers as a whole doing relatively well in recent years but the middle losing ground because of a focus on improving pay for those at the bottom, rather than any acceleration in rewards for those at the top.

Clearly wages are only one measure of wellbeing, and these comparisons take no account of the potential employment effects associated with relatively high levels of pay at the lower end of the earnings distribution. **There is *some* indication that a wage/employment trade-off may exist, but the relationship is far from straightforward and appears to be changing**. For example France, with its relatively low levels of pay inequality, has consistently recorded the highest level of unemployment among the ten countries. Similarly, growth in *em*ployment has been strongest over the period among the *chronic breakdown* countries. In contrast however, several of the *mild breakdown* group in which pay dispersions are relatively low have also performed well, while employment growth in the US appears to have come to an end sometime before the recession of 2008-09 and unemployment levels in the country were second only to France in 2010.

While it is worrying that even in the best performing countries the trend has been towards an increasing disconnect between growth and the pay of ordinary workers, the findings set out in this report suggest that rapid deterioration in the face of global economic forces is not inevitable, and that states, firms and workers have some ability to influence and effect this relationship. It is not

clear how these trends will develop in the aftermath of the financial crisis and global recession but, as well as presenting new challenges, this period represents a potential opportunity for reflection and rebalancing in advanced economies.

Future work

As noted at the outset, this report is one of three in a series that seeks to unpick the complicated relationship between economic growth and gains in the material wellbeing of ordinary working people. Two other reports in the series will be published before the end of the year. A paper from Professor John van Reenen of the London School of Economics will examine the idea of a 'decoupling' of economic growth and material wellbeing. The report will separate myth from reality by defining specific *types* of decoupling that have and have not occurred in both the US and UK.

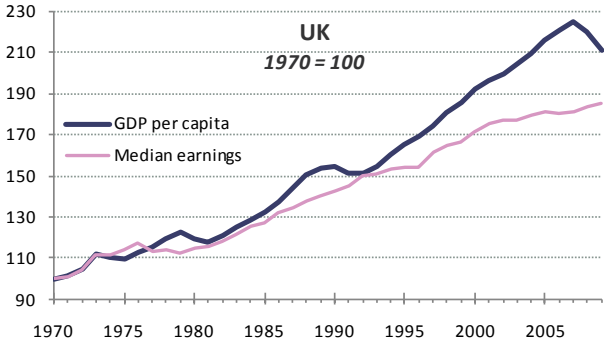
A report from Professor Lane Kenworthy of the University of Arizona will turn to a focus on household *income* as opposed to individual earnings. Specifically, it will compare trends in per capita GDP growth and bottom half household income across 17 countries over 30 years, giving a clearer sense of the role played by the tax-benefit system in distributing the proceeds of growth. It asks 'when does economic growth benefit people on low to middle incomes – and does it do so principally through the channel of wages or of government transfers?'

In the past year the prospects for growth, both in the UK and other advanced economies, have become increasingly grave. Yet it has also become clear that securing growth is not the only major economic challenge we face. Longer term, our political leaders also need to worry about the way in which growth feeds through into broad based improvements in living standards. Far from simply suffering the fallout of the 2008-09 recession, low to middle income Britain is in the midst of a more chronic decline. Median wages have been stagnant, disposable incomes falling, and middle-skill jobs drying up for a number of years. Securing a genuine 'recovery' must mean not just achieving growth, but also ensuring that growth feeds through into broad based material gains.

Technical Annex

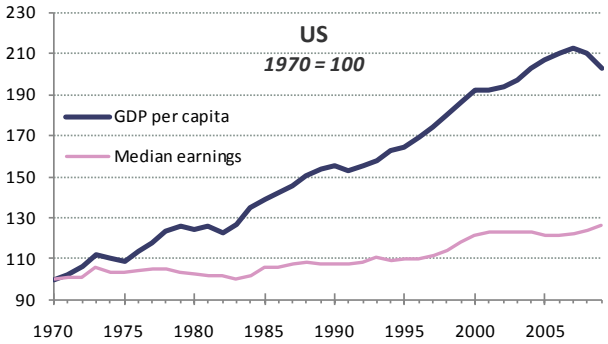
A1 Country data

Figure A1: GDP and earnings trends in a selection of economies: 1970 - 2009



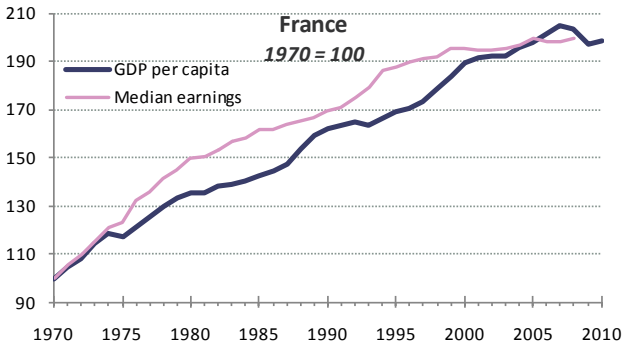
In the **UK**, median wages broadly kept pace with growth in GDP per capita between 1970 and 1985. Although they subsequently grew more slowly than GDP per capita for a brief period, they regained ground during the recession of the early 1990s and kept pace with economic growth towards the end of that decade. However, the two lines diverged from around 2001 onwards, with median wages rising more slowly than GDP per capita throughout the early and mid 2000s.

Thus, Table 1 showed that GDP per capita increased by an average of 2.4 per cent a year in the period from 2000 to the start of the 2008-09 recession, while median pay increased by just 1.0 per cent a year.



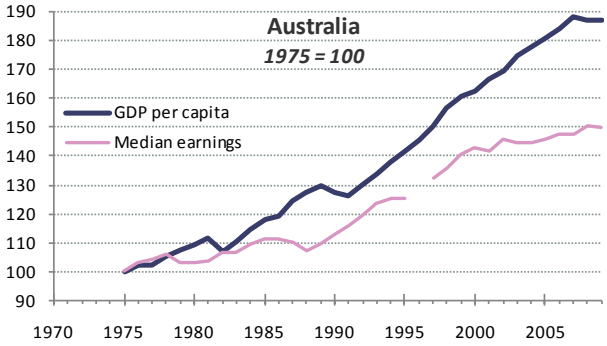
In the **US**, the trend appears both more established and more pronounced than in the UK, with median wages largely unchanged over the four decades shown despite a doubling of GDP per person.

Table 1 showed that median wages grew by less than half the rate of GDP in the 1970s, 1980s and in the growth years of the 2000s.

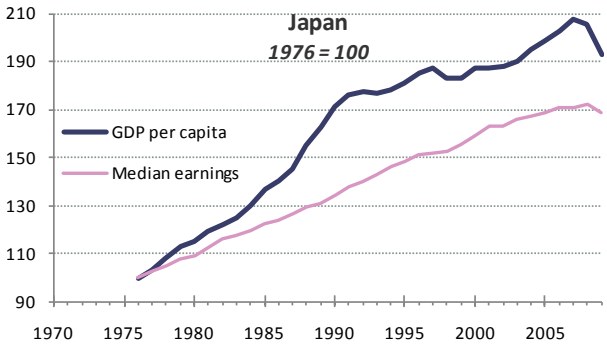


In **France**, median wages grew more quickly than GDP per capita in the late 1970s, and subsequently tracked it relatively closely. However, pay stagnated from around 2000 onward, despite continued economic growth.

As such, Table 1 showed that median pay grew by just 0.2 per cent between 2000 and the start of recession, compared with a 1.4 per cent increase in GDP per capita. It should be noted, however, that the French data relates to private sector workers only and may therefore misrepresent economy wide trends somewhat.

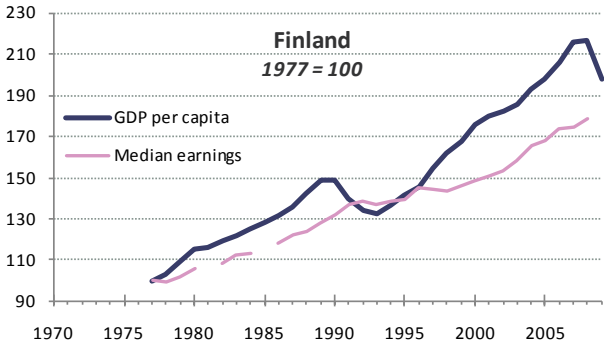


As in the US, the **Australian** experience seems long established, although the gap between GDP and wage growth has not been as great and median pay kept pace for a time during the 1990s. However, median wages increased by just 0.6 per cent a year between 2000 and the start of recession, even though GDP per capita increased by 2.0 per cent a year.



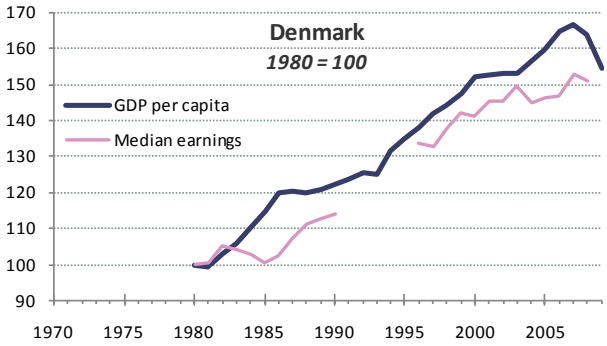
In **Japan**, median earnings grew more slowly than GDP per capita in the early part of the period, with the gap between the two lines growing particularly quickly during the late 1980s. Relative wage growth recovered in the 1990s (such that median pay grew more quickly than the rate of GDP per capita), but median wage growth again slipped below the level of economic growth prior to the 2008-09 recession.

As with France, the Japanese data excludes a number of workers (public sector, irregular) and should therefore be treated with caution.

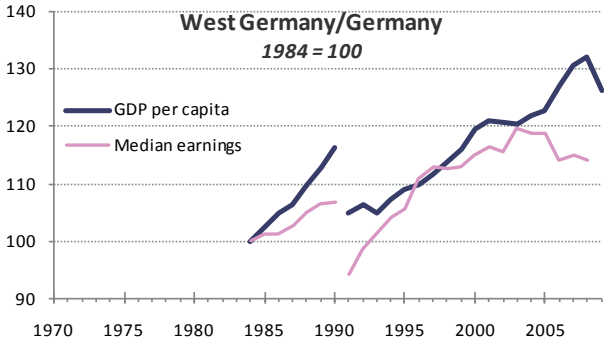


In **Finland**, median wages failed to keep pace with GDP growth for a brief spell in the aftermath of a deep recession at the start of the 1990s, but subsequently recovered. From the early 2000s onwards they closely tracked economic expansion.

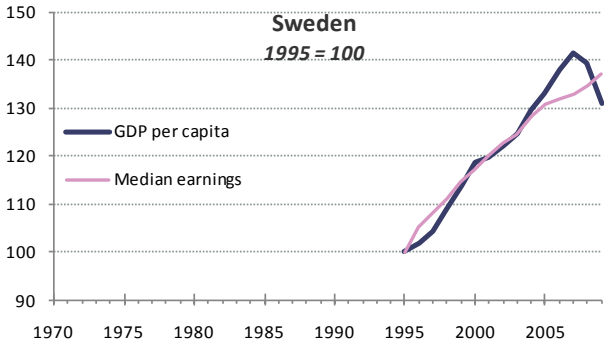
Table 1 shows that GDP per capita grew at an annual average of 2.9 per cent in the decade, compared with growth of 2.3 per cent in median pay.



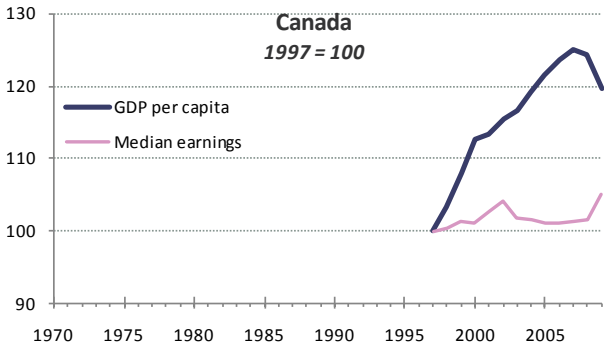
In **Denmark**, median wages fell behind GDP per capita growth in the 1980s, but tracked it closely during the 1990s and the early 2000s. While they subsequently fell even as economic output continued to increase, recovery in 2007 means that over the decade as a whole, the gap between median wages and GDP per capita widened only slightly.



The picture in **Germany** is complicated by unification, with both median wages and GDP per capita falling significantly in 1991 compared with prior West German data. However, after growing broadly in line with GDP in the 1990s, median wages fell in real terms during the 2000s, with the decline beginning long before the recession of 2008-09.



In **Sweden**, median wages and GDP per capita grew at a similar pace throughout the 1990s. From the mid 2000s onwards, however, median earnings slowed relative to GDP. Although the gap remained smaller than in most of the other countries set out here, Table 1 shows that median pay grew by just 1.9 per cent a year, while economic output increased by an annual average of 2.8 per cent.



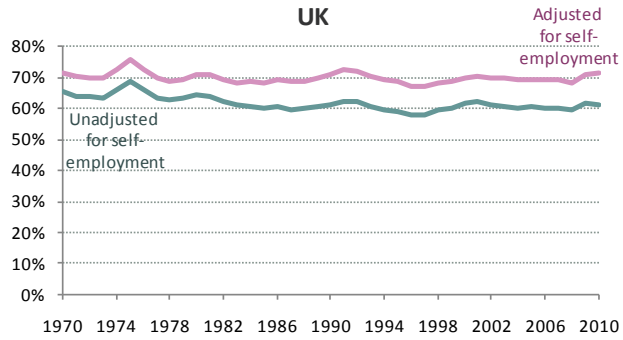
Despite steady GDP growth from the mid 1990s to the recession of 2008-09, median wages in **Canada** were largely flat over the period, with a magnitude of difference in line with the US experience.

For example, Table 1 showed that GDP per capita grew at an annual average of 1.9 per cent between 2000 and 2007, but median wages were, on average, entirely flat.

Notes: All figures adjusted using relevant country GDP deflators. The data is not directly comparable across countries for a number of reasons. First, the figures are not adjusted for changes in purchasing power parity or exchange rates and secondly, wage measurements and definitions vary from country to country. Instead, each chart serves to compare growth and wage performance within the country specified. In each instance, the index year is the earliest for which data is available. **UK**: median gross weekly earnings of all full-time workers; **US**: median gross usual weekly earnings of all full-time workers aged over 16; **Japan**: median scheduled gross monthly earnings of regular, full-time employees; excludes employees in establishments with fewer than 10 regular workers and all employees in the public sector, agriculture, forestry and fisheries, private household services and foreign embassies; data exclude overtime earnings; **Australia**: median gross weekly earnings in main job (and all jobs prior to 1988) of full-time employees; **Finland**: median gross annual earnings of full-time workers; **Denmark**: median gross hourly earnings of all workers; workers receiving less than 80% of the minimum wages are excluded; **Germany**: median gross monthly earnings of full-time workers; 1984-1990 data is for West Germany; 1991 onwards is for unified Germany; throughout the timeframe shown, the GDP deflator used is for Germany as a whole, based on OECD estimates for the pre-unification period; **France**: median annual salary for full-time employees in the private sector only; **Sweden**: median monthly salary for full-time employees including fixed allowances, incentive pay, bonuses, payments for shift work, unsocial hours etc, compensation for contingency and emergency, benefits and other cash compensation; **Canada**: median gross weekly earnings of full-time workers.

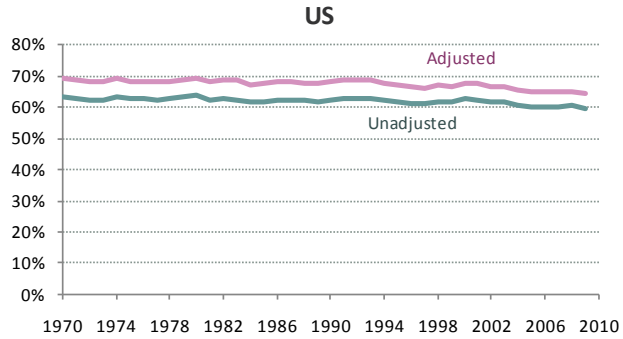
Sources: OECD Stat; Statistics Sweden; French data provided by Laurence Rioux, INSEE

Figure A2: Labour share of gross value added in selected economies: 1970 - 2010



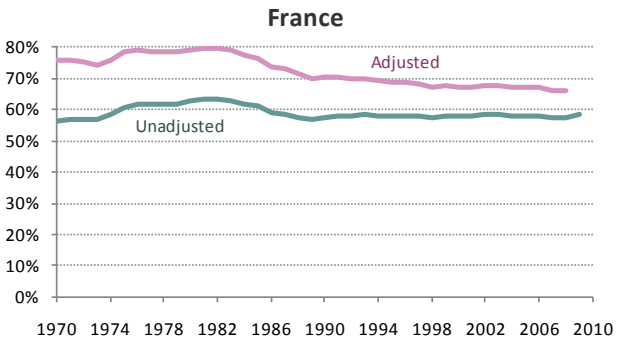
In the **UK**, the unadjusted labour share displayed a clear spike in the mid 1970s associated with the oil price crisis of the period, which dramatically – but temporarily – squeezed profits. The subsequent reversal resulted in the labour share returning to early 1970s levels by the end of the decade. More generally, fluctuations in the figure have tended to reflect economic cycles, with the share rising during recessions (when profits fall) and declining during recoveries. However, over the period as a whole there was a slight, but persistent, downward trend in the labour share. It fell from 65 per cent in 1970 to 59 per cent in 2008. Despite increasing slightly during the subsequent recession, it remained below its starting point in 2010 (61 per cent).

By definition, the *adjusted* labour share figure was consistently higher than the unadjusted one. However, it is worth noting that the gap between the two lines increased over time, reflecting the growing number of workers in the UK registered as self-employed. On this measure, the labour share in 2010 (71 per cent) was largely unchanged from its 1970 level (72 per cent).

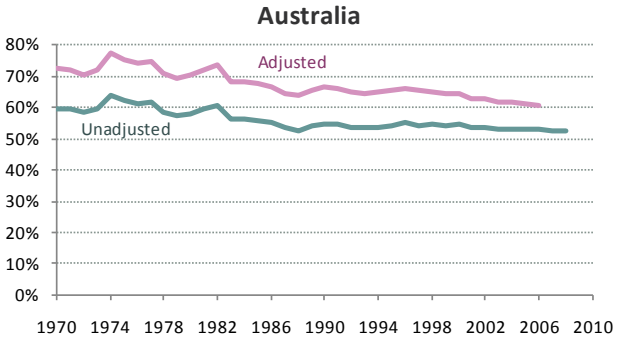


In the **US**, the unadjusted labour share figure followed a similar, but less volatile, path to the UK one, falling steadily from 64 per cent in 1970 to 60 per cent in 2009.

The gap between the unadjusted and adjusted figures was smaller however and, in contrast to the UK experience, closed slightly over the period.

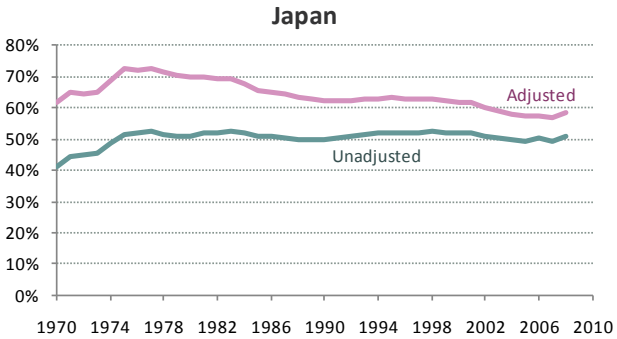


In **France**, the unadjusted labour share spiked in the late 1970s, but was otherwise flat. It therefore ended the period (58 per cent) slightly up from its 1970 level (56 per cent). The gap between the adjusted and unadjusted figures narrowed much more significantly than in the UK and US, meaning that the adjusted share fell from 76 per cent in 1970 to 66 per cent in 2008.



A steady downward trend in labour share is more marked in the case of **Australia** than in the other countries considered above. Having started from a level below that in the UK and US in 1970 (60 per cent), the unadjusted labour share in Australia fell more quickly, reaching just 53 per cent in 2008, although the trend was relatively flat from the late 1980s onwards.

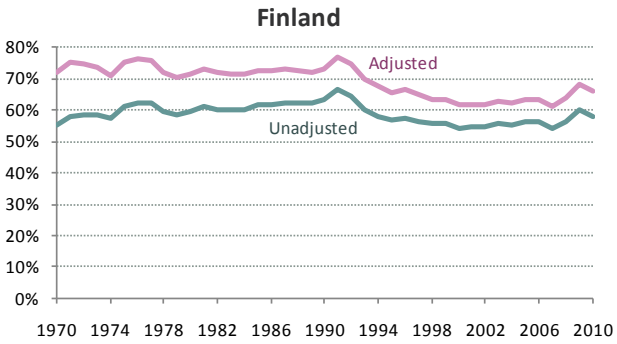
Over the period as a whole, the gap between the two measures again narrowed, meaning that the decline in the adjusted labour share was even more pronounced.



As in France, unadjusted labour share in **Japan** *increased* between 1970 and 2008, although it remains low relative to UK and US levels. Moreover, most of the growth took place at the start of the period. It rose from 41 per cent in 1970 to 52 per cent in 1975. Thereafter it was relatively flat, standing at 51 per cent in 2008.

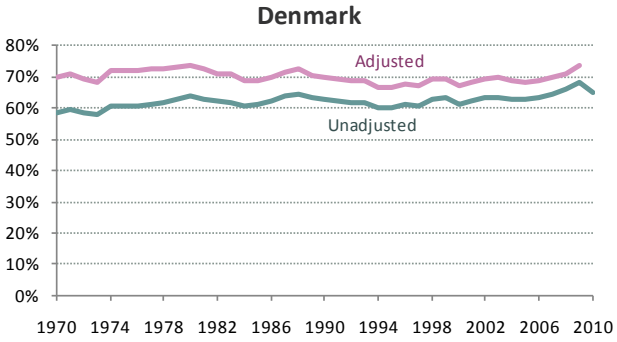
A significant reduction in the proportion of self-employed workers means that the adjusted labour share moved in the opposite direction, falling from 62 per cent in 1970 to 58 per cent in 2008.

In keeping with the non-UK countries discussed above, the gap between the adjusted and unadjusted figures narrowed, such that the adjusted trend over the period was downwards – from 72 per cent in 1970 to 66 per cent in 2010.



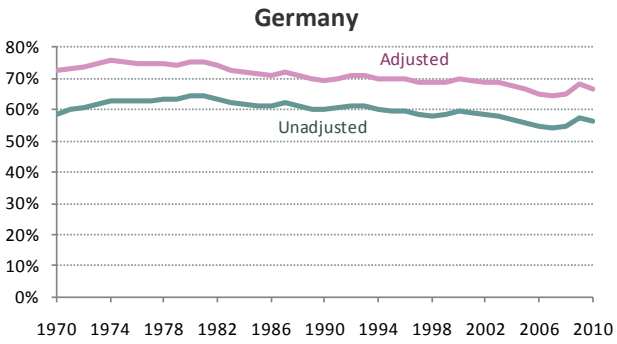
The unadjusted labour share in **Finland** was broadly flat over the period as a whole, with initial increases – from 55 per cent in 1970 to 67 per cent in 1991 – being offset by subsequent steady decline.

It reached a low of 54 per cent in 2007, before increasing during recession to stand at 58 per cent in 2010.



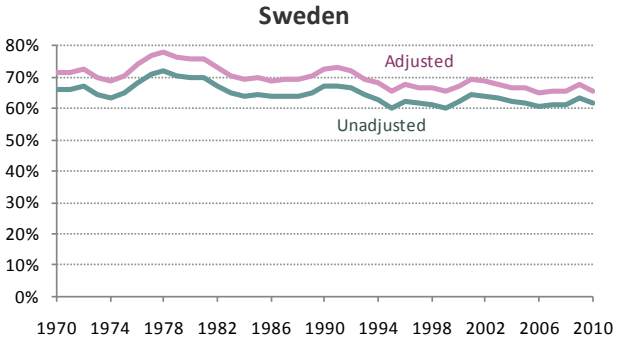
Unadjusted labour share increased in **Denmark**, from 59 per cent in 1970 to 65 per cent in 2010. Unlike in many other countries much of the upward trend took place in the most recent decade, rising from 61 per cent in 2000 to 68 per cent in 2009.

Again a reduction in the proportion of self-employed workers served to reduce the gap between the adjusted and unadjusted labour share figures.



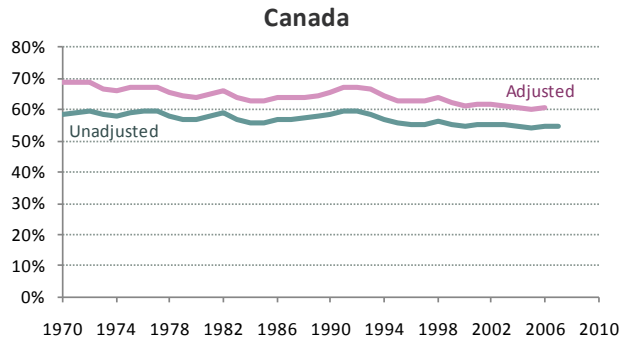
In **Germany**, the unadjusted labour share fell from 64 per cent in 1982 to 55 per cent in 2008, with a slight upturn in the subsequent recession meaning that it ended the period at 56 per cent.

The gap between the unadjusted and adjusted figures narrowed only slightly, meaning that the adjusted labour share broadly followed the same trend.



The picture in **Sweden** is similar to that in the UK, with the unadjusted labour share peaking in the late-1970s before declining steadily over the rest of the period. It fell accordingly from 66 per cent in 1970 to 62 per cent in 2010.

The adjusted labour share did not follow the same pattern as in the UK, however, with a slight narrowing of the gap meaning that it too fell.



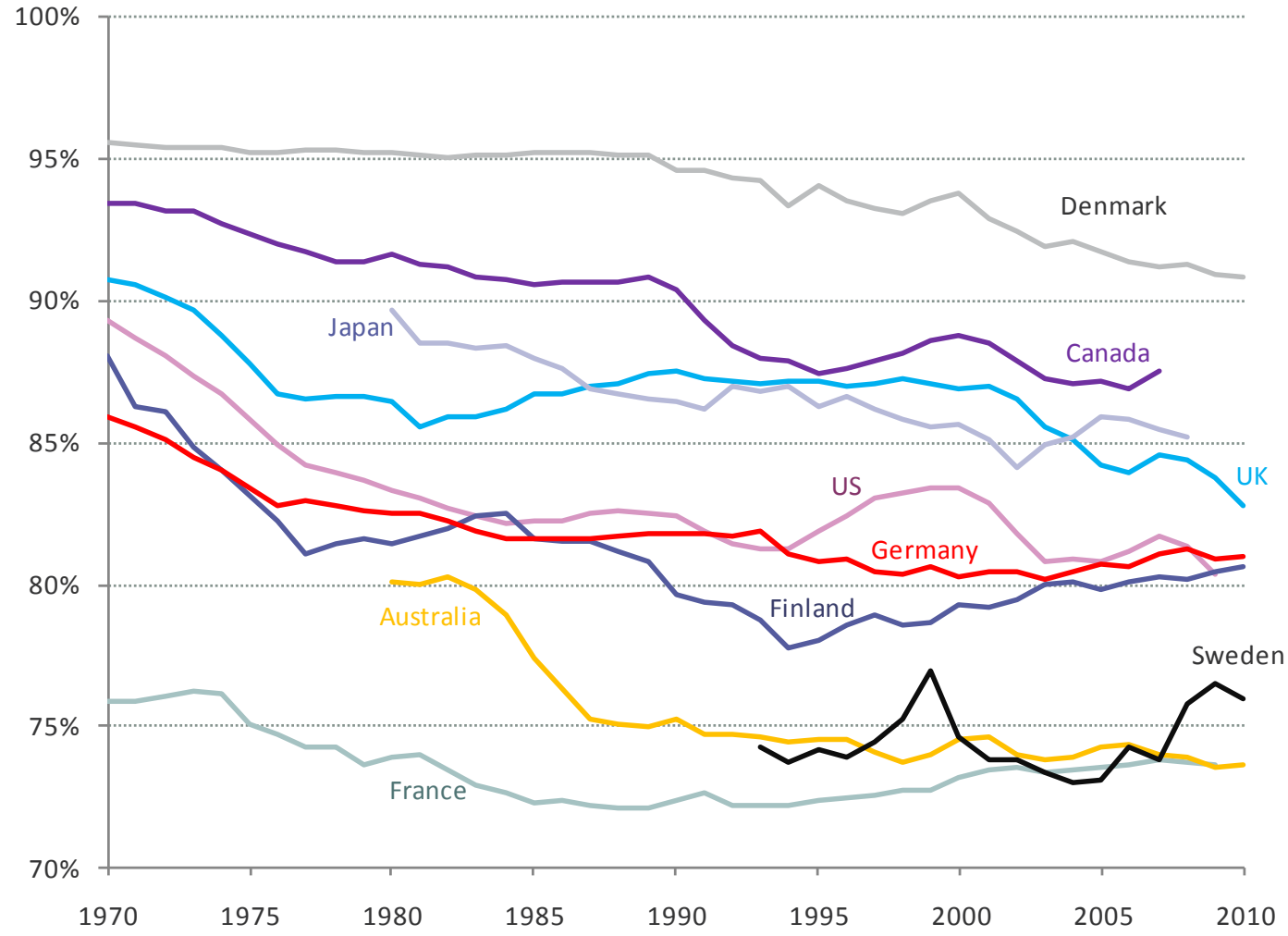
The **Canadian** experience appears more reminiscent of the Australian one, with steady decline over most of the period resulting in the unadjusted labour share falling from 59 per cent in 1970 to 55 per cent in 2007.

The adjusted labour share followed the same path, with the gap between it and the unadjusted measure closing only slightly.

Notes: Unadjusted data divides total compensation of employees (wages and salaries in cash and in-kind, plus social contributions made by employers) by GVA at factor cost. Adjusted data are produced by multiplying the unadjusted shares in each industrial sector by sector specific self-employment ratios. These ratios are calculated as either total employment in the sector divided by numbers of employees (for UK, US, Japan and Finland), or total numbers of hours worked in the sector divided by numbers of employee hours (Australia, Denmark, Germany, France, Sweden and Canada).

Source: OECD Stat

Figure A3: Wages as a proportion of all employee compensation: 1970 - 2010



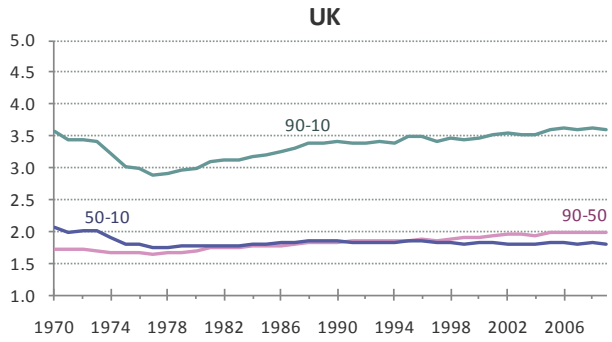
Source: OECD, Stat

Trends in the shares of employee compensation paid out in the form of wages declined across the majority of countries considered over the period, although the biggest falls tended to occur in the 1970s and 1970s.

One exception to this rule is **Denmark**, where the wage share was steady between 1970 and 1990, before falling thereafter. Despite a steady decline in this latter period, the wage share here remained significantly higher than in any of the other countries.

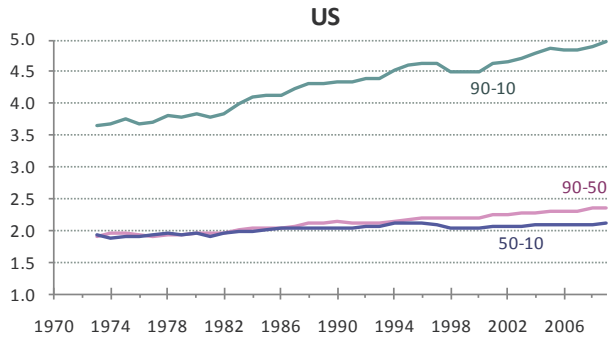
At the opposite end of the spectrum, wage share was consistently lowest in **France**, **Australia** and **Sweden**, although in the third of these countries the trend towards the end of the period was upwards.

Figure A4: Pay ratios in selected economies: 1970 - 2009



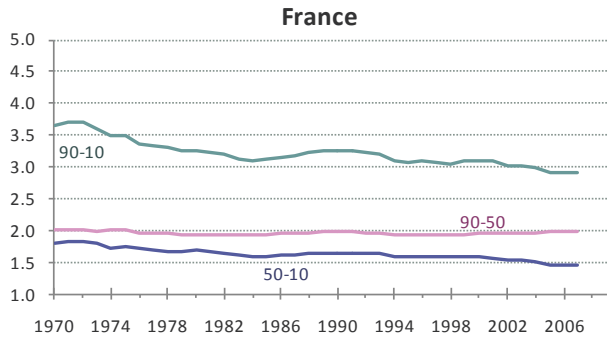
In the **UK**, the 90-10 ratio declined quite sharply in the early 1990s, but subsequently increased steadily, ending the period back at its 1970 level of 3.6. The 90-50 ratio was flat at the start of the period, but increased thereafter, rising from 1.7 in 1970 to 2.0 in 2009. The 50-10 ratio fell in the early 1970s, was flat throughout the 1980s and 1990s, but declined slightly in the most recent decade.

The middle therefore appears to have lost ground to both the top and the bottom in the last ten years.



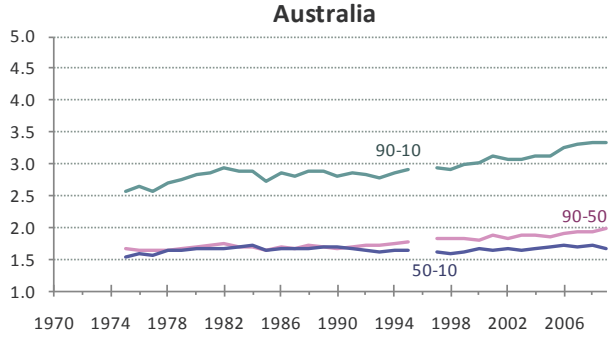
The 90-10 ratio in the **US** is the highest recorded in any of the countries discussed here. Having started at 3.7 in 1973, it rose throughout the period to reach 5.0 by 2009.

The 90-50 ratio also increased steadily, from 1.9 to 2.4. The 50-10 ratio increased in the period to the mid-1990s, but remained relatively flat thereafter.



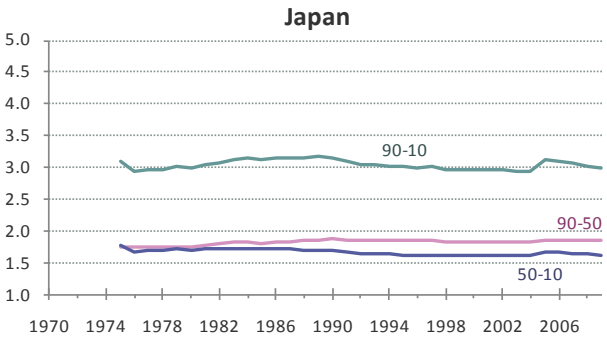
In contrast to every other country set out here, the 90-10 ratio in **France** declined significantly and consistently across the period. It fell from a high level (relative to the other countries considered) of 3.7 in 1970, to a mid-level rate of 2.9 in 2007. Over the same period, the 90-50 ratio was broadly flat (at 2.0) and the 50-10 ratio fell steadily (from 1.8 to 1.5).

It should be noted however, that due to data availability the French pay data is net (of employee social security contributions) rather than gross.



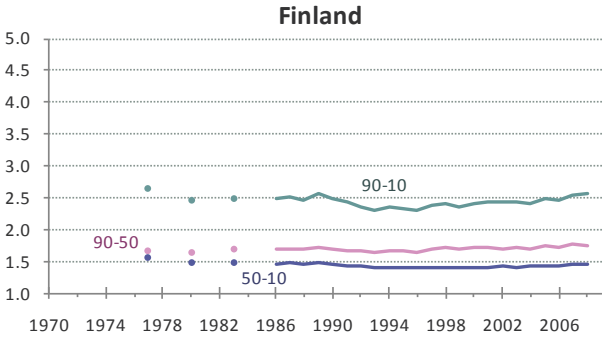
Trends in **Australia** were similar to those observed in the US, although each dispersion level was of a lower magnitude.

The 90-10 ratio increased from 2.6 in 1975 to 3.3 in 2009, while the 90-50 ratio rose from 1.7 to 2.0. The 50-10 ratio remained relatively flat, rising slightly from 1.5 to 1.7.



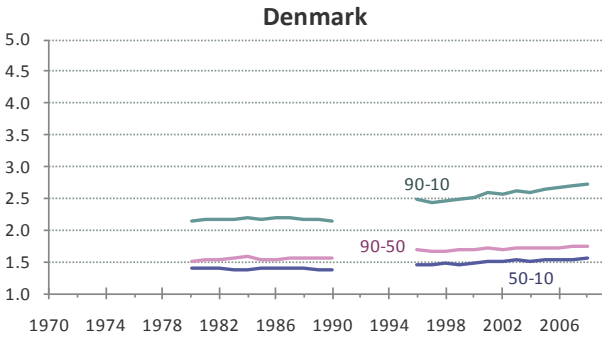
As in France, the various pay dispersion measures were flat or falling over the period in **Japan**. The 90-10 ratio fell from 3.1 in 1975 to 3.0 in 2009, the 90-50 ratio stayed constant at 1.8 and the 50-10 ratio dropped from 1.8 to 1.6. Japan was ranked sixth among the ten countries in 2009 in relation to all three of the ratios.

As with Figure A1, the Japanese data excludes a number of workers and may therefore misrepresent movements to some extent.



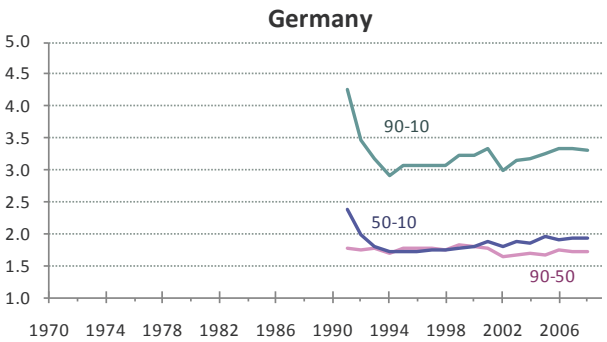
In **Finland**, each of the dispersions declined slightly in the 1970s and 1980s, before growing slowly over the remainder of the period.

The 90-10 ratio fell from 2.6 in 1977 to 2.3 in 1996; it ended the period back at 2.6. Similarly, the 90-50 ratio moved from 1.7 to 1.8, while the 50-10 ratio dropped from 1.6 to 1.5.

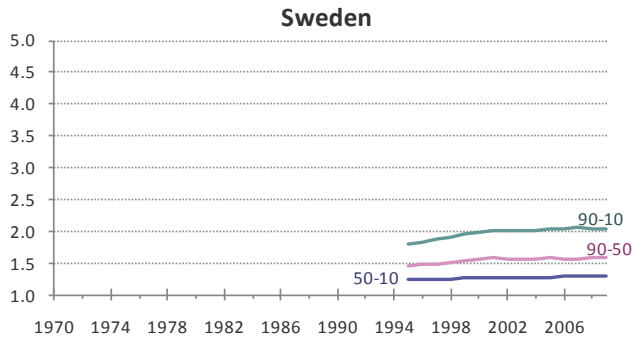


Each ratio was flat in **Denmark** throughout the 1980s, before rising steadily in the 1990s and 2000s.

Over the period, the 90-10 ratio rose from 2.1 in 1980 to 2.7 in 2008, the 90-50 ratio increased from 1.5 to 1.7 and the 50-10 ratio rose from 1.4 to 1.6.

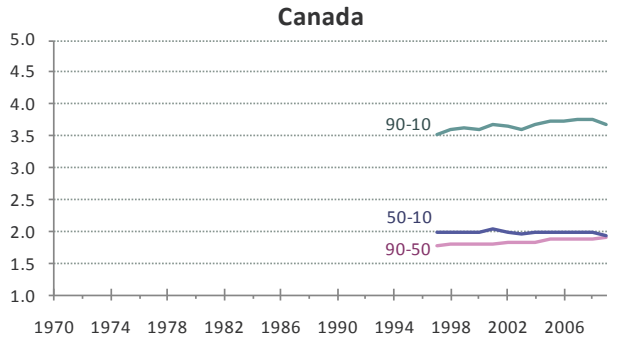


As with the median earnings and GDP data in Figure A1, the pay ratios in **Germany** were clearly affected by unification at the beginning of the 1990s. From the middle of that decade, however, all three ratios rose steadily. While the 50-10 ratio continued in the same vein throughout the period, the 90-10 and 90-50 ratios dropped somewhat at the start of the 2000s, before picking up again over the course of the decade.



Each of the ratios in **Sweden** increased in the late 1990s, but were flat during the 2000s and remained the lowest recorded in the countries discussed here.

The 90-10 ratio ended at just 2.0 – the same as the 50-10 ratio in the UK. Similarly, the 90-50 ratio was just 1.6 and the 50-10 ratio was 1.3.



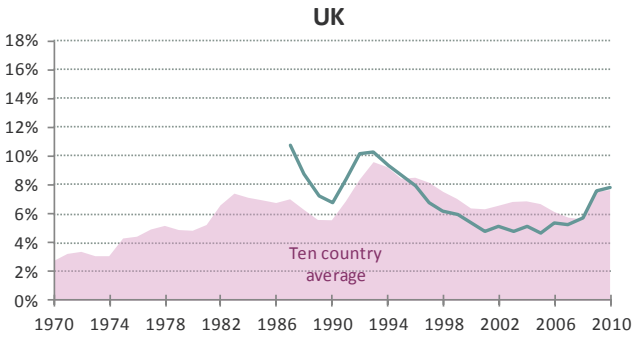
Canada recorded levels much closer to the UK, with the top moving away from the middle and bottom in the period for which data is available.

The 90-10 ratio rose from 3.5 in 1997 to 3.7 in 2010 and the 90-50 ratio increased from 1.8 to 1.9. By contrast, the 50-10 ratio declined very slightly from 2.0 to 1.9.

Notes: **UK**: gross weekly earnings of all full-time workers; **US**: gross usual weekly earnings of all full-time workers aged over 16; **Japan**: scheduled gross monthly earnings of regular, full-time employees; excludes employees in establishments with less than ten regular workers and all employees in the public sector, agriculture, forestry and fisheries, private household services and foreign embassies; data exclude overtime earnings. **Australia**: gross weekly earnings in main job (and all jobs prior to 1988) of full-time employees; **Finland**: gross annual earnings of full-time workers; **Denmark**: gross hourly earnings of all workers; workers receiving less than 80% of the minimum wages are excluded; **Germany**: gross monthly earnings of full-time workers; **France**: net annual earnings of full-time, full-year workers; data are adjusted for annual hours worked to represent full-year equivalent earnings; data for 1981, 1983 and 1990 are estimations by INSEE; earnings are net of employee social security contributions but not of income tax; **Sweden**: median monthly salary for full-time employees including fixed allowances, incentive pay, bonuses, payments for shift work, unsocial hours etc, compensation for contingency and emergency, benefits and other cash compensation; **Canada**: gross weekly earnings of full-time workers.

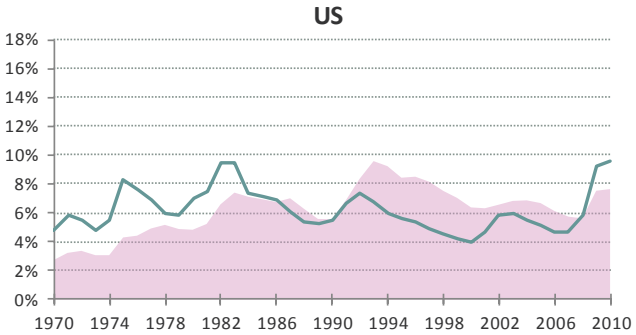
Sources: OECD Stat; Statistics Sweden

Figure A5: Unemployment rates in selected countries: 1970-2010



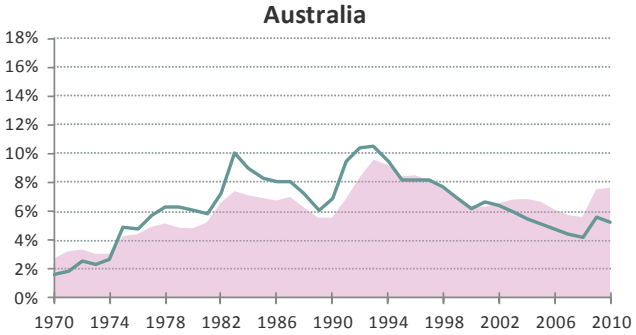
In the **UK** unemployment fell steadily from a peak of 10.3 per cent at the end of the early 1990s recession to a low of 4.6 per cent in 2005. It subsequently increased slightly during the mid 2000s, before a sharp upturn during the 2008-09 recession.

The UK rate was relatively close to the ten-country average throughout and ended the period 6th highest.



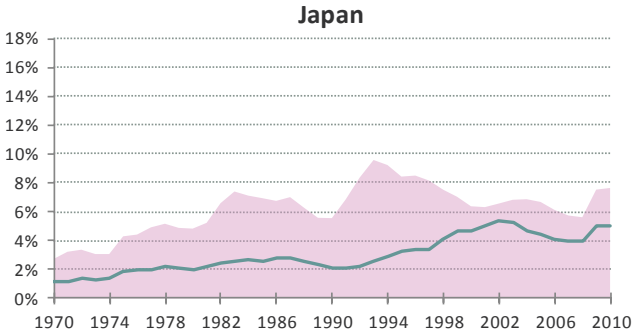
Unemployment in the **US** was above the ten-country average throughout the 1970s, but subsequently fell steadily such that it was some way below the average during the 1990s and the early 2000s, reaching a low of just 4 per cent in 2000.

However, it rose particularly sharply during the recent recession, with the US recording the 2nd highest rate of all the countries in 2010.



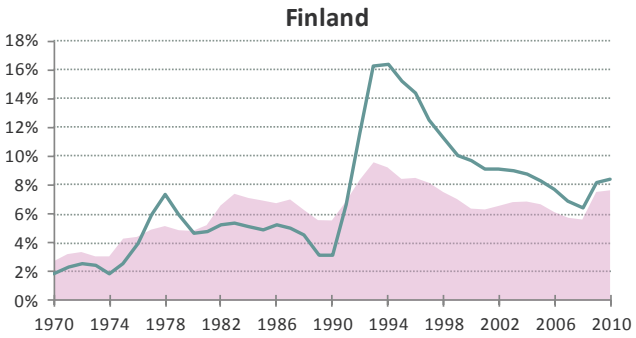
The rate in **Australia** increased from just 1.6 per cent in 1970 to peaks of 10 per cent in 1983 and 10.5 per cent in 1993. As in the US, though, a sustained decline in the 1990s and 2000s resulted in the Australian rate falling below the ten-country average.

A relatively small upturn during the 2008-09 recession means that, at 5.2 per cent, Australian unemployment was the second lowest among our ten countries in 2010.



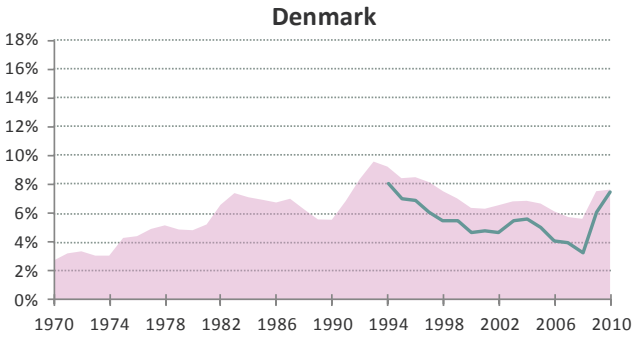
Unemployment in **Japan** was consistently one of the lowest rates of all the countries we have considered, although it increased steadily throughout the period. It rose from just 1.1 per cent in 1970 to a peak of 5.4 per cent in 2002 – still below the ten-country average.

Despite a slight increase at the end of the period, the Japanese rate of 5.1 per cent remained the lowest recorded.



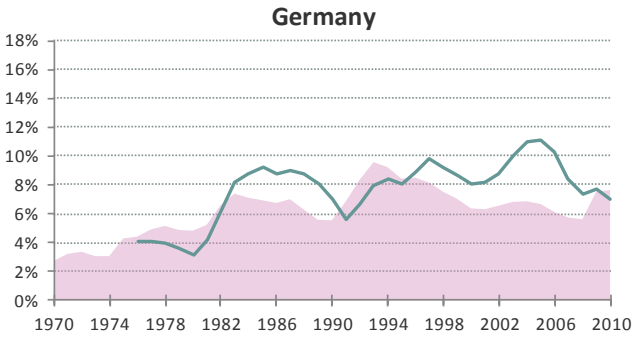
The trend in **Finland** was dominated by a massive increase in unemployment associated with the recession of the early 1990s, resulting in a peak rate of 16.4 per cent. Prior to this, the rate was below the ten-country average.

Despite a sustained reduction during the strong subsequent recovery period, unemployment remained above average during the 2000s, with Finland recording the 3rd highest level in 2010.



The rate in **Denmark** also declined in the 1990s and early 2000s, but from a much lower starting point. It reached a low of 3.3 per cent in 2008, compared to a ten-country average in the same year of 5.6 per cent.

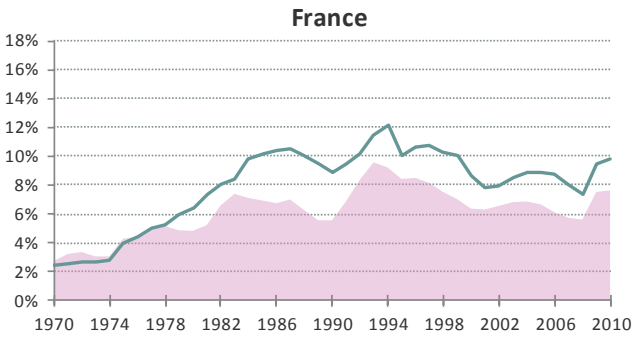
Despite a sharp increase in the following two years, the Danish rate was only the 7th highest of the ten countries in 2010.



The unemployment picture in **Germany** in recent decades looks somewhat different. In contrast to most of the other countries set out here, the rate *increased* throughout the 1990s and early 2000s, but *fell* in the latter part of the decade.

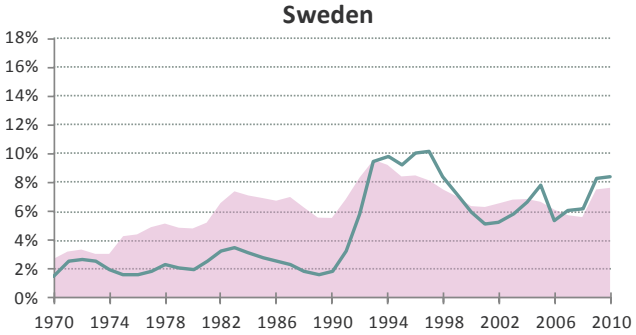
The surprisingly strong German employment performance during the recent recession has been credited to three factors: the absence of a boom in the preceding years; wage restraint during the recession; and the widespread use of working time accounts which enable employers to avoid overtime pay if they guarantee standard wages over a defined period of time.

The German rate ended the period at 7.1 per cent, 8th highest among the ten countries.



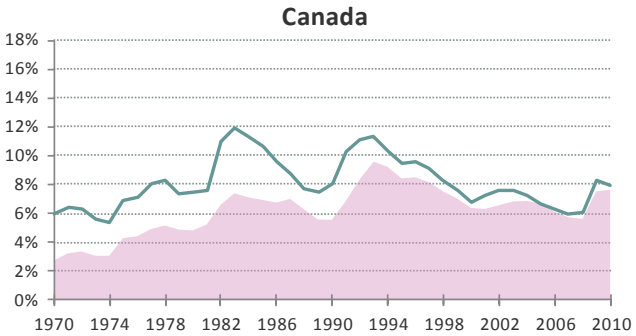
Having increased steadily throughout the 1970s and early 1980s, the unemployment rate in **France** was relatively flat for the remainder of the period. Even as it fell slightly during the 2000s, it remained well above the ten-country average.

A rate of 9.8 per cent in 2010 placed France bottom of the ten countries considered.



The pattern in **Sweden** looks much like the Finnish one, although with a less dramatic upswing in unemployment in the 1990s. Having been consistently low during the first half of the period, the rate jumped to 9.5 per cent in 1993 and never returned to its prior levels.

It ended the period at 8.4 per cent, the 3rd highest rate recorded.



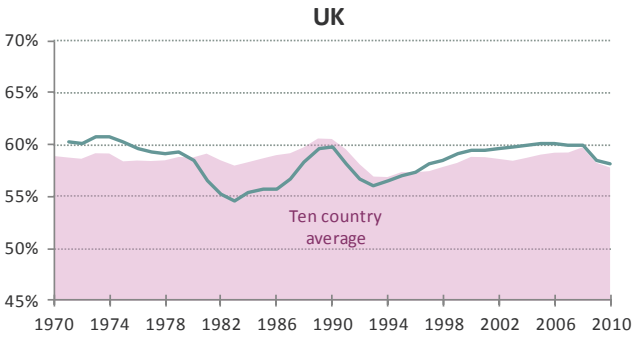
Despite relatively little movement over the four decades considered, with an overall increase from 5.9 per cent in 1970 to 8 per cent in 2010, unemployment in **Canada** slowly closed the gap with the ten-country average.

Its final rate placed it 5th among the ten countries detailed.

Notes: The data in each chart is collected from national labour force surveys and complies with International Labour Office definitions. There are, however, some differences across the countries, along with breaks in each series. **UK**: All persons aged 16 and over living in private households, including armed forces personnel, students in residence halls and NHS and hospital staff living in NHS/hospital trust accommodations. From 2009, data relates to persons aged 16 to 74. **US**: All persons aged 16 and over, excluding inmates of institutions and members of the armed forces stationed in the US and abroad. **Australia**: All persons aged 15 and over living in private and non-private dwellings. **Japan**: All Japanese and foreigners aged 15 and over who have lived, or will be living, in the country for more than three months, including the institutional population and national self-defence forces. **Finland**: All persons between 15 and 74 years of age residing in the country, including the armed forces, foreign workers and citizens temporarily abroad. **Denmark**: Persons aged 15 to 66 years. **Germany**: The resident population 15 and above, including career and conscript members of the armed forces and the institutional population. Figures prior to 1991 relate to West Germany. **France**: All employed and unemployed persons aged 15 and over living in private households, including members of the armed forces. **Sweden**: All persons in Sweden between 16 and 64 covered by the civil registration, including career and conscript members of the armed forces. From 2001, the data covers persons aged 15-74. **Canada**: All persons aged 15 and over residing in the country, including "non-permanent residents".

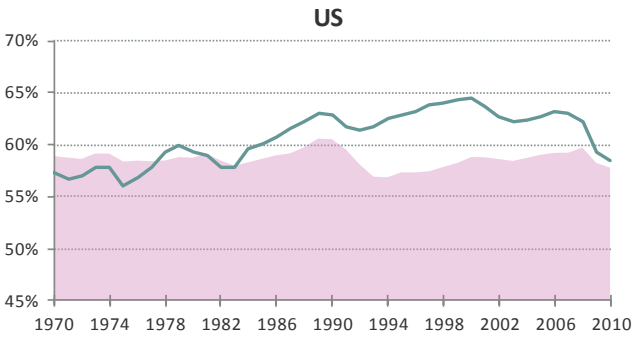
Sources: ILO, *Labour Statistics Database*; ONS, *Labour Market Statistics*, Table A.10; Australian Bureau of Statistics

Figure A6: Employment to working-age population ratios in selected countries: 1970 - 2010



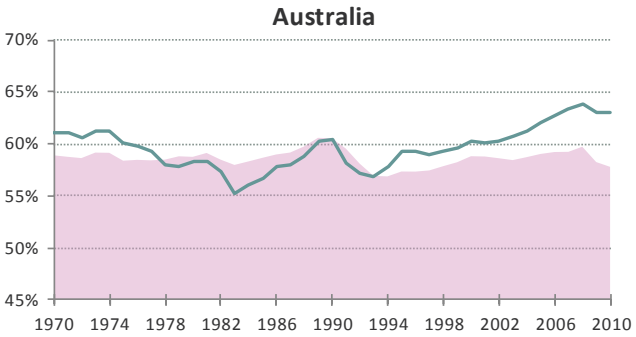
In the **UK**, the employment-population ratio fell from a peak of 60.7 per cent in 1974 to a low of 54.5 per cent in 1983. It subsequently described a long-run upward trend, without ever returning to the levels of the early 1970s.

It reached a post 1970 peak of 60 per cent in the mid-2000s, before falling quite sharply during the 2008-09 recession. It ended the period very close to the ten-country average, ranking 7th highest overall.



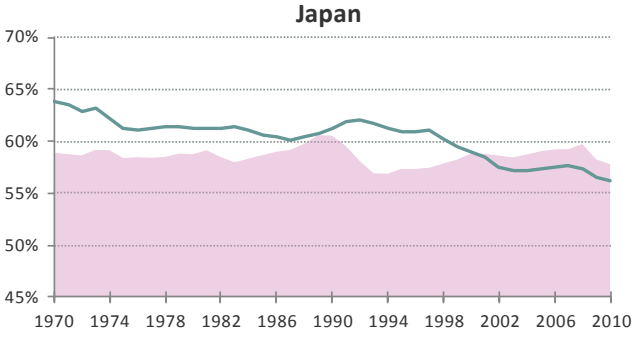
The employment ratio grew steadily in the **US** over much of the period, rising from 57.4 per cent in 1970 to 64.4 per cent in 2000. This growth meant that the US ratio was significantly higher than the ten-country average.

However, a subsequent reversal in employment growth means that the gap narrowed over the course of the last decade, with the ratio falling to 62.3 per cent in 2003 and 58.5 per cent in 2010.



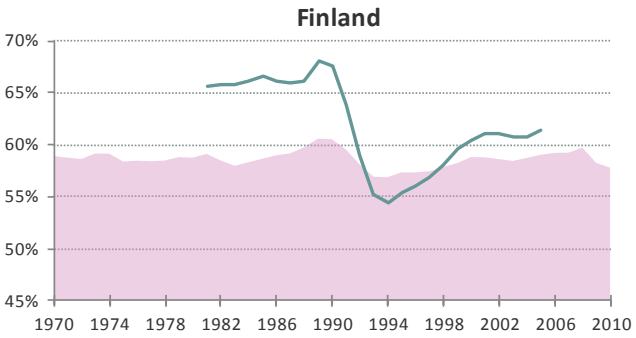
The ratio in **Australia** fell during the first half of the period, but increased steadily and significantly over the second half. It fell from 61.1 per cent in 1970 to a low of 55.3 per cent in 1983, before increasing to a high of 63.9 per cent in 2008.

The Australian ratio of 63 per cent was the highest recorded among the ten countries in 2010.



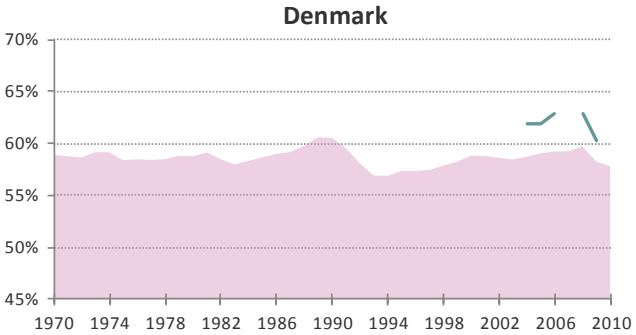
The employment ratio in **Japan** fell slightly between 1970 and 1990, and much more quickly thereafter, reflecting the economic difficulties faced by the country during the 'lost decade'.

Over the period as a whole it fell from 63.8 per cent to 56.2 per cent, dropping below the ten-country average over the course of the 2000s.



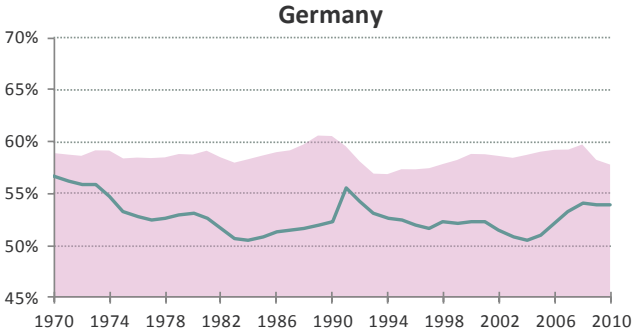
As in relation to the unemployment data, the trend in **Finland** was dominated by the recession of the early 1990s. The employment ratio thus fell rapidly from being well above the ten-country average (at 68 per cent in 1989) to being below it (at 54.4 per cent in 1994).

It subsequently recovered somewhat, rising to 61.3 per cent by 2005, but it did not approach its previous levels. This movement did, however, represent a return to above-average performance.



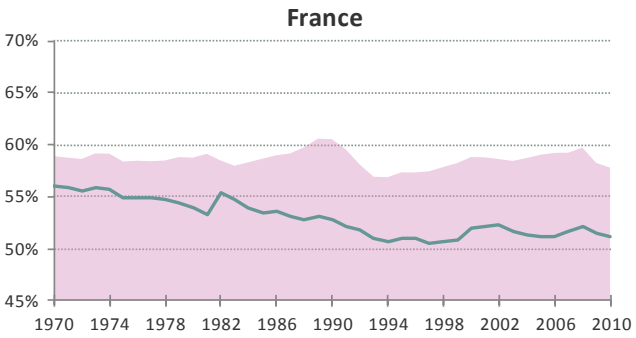
There is a lack of comparable employment data for **Denmark** over the period considered, making it hard to determine what happened here. It is probable, however, that (as with unemployment) the trend was similar but less marked than the one displayed in Finland.

The data that we *do* have, for the mid-2000s, suggests that the ratio in Denmark was above the ten-country average in the latter part of the period, ranking third among the ten countries in 2009.



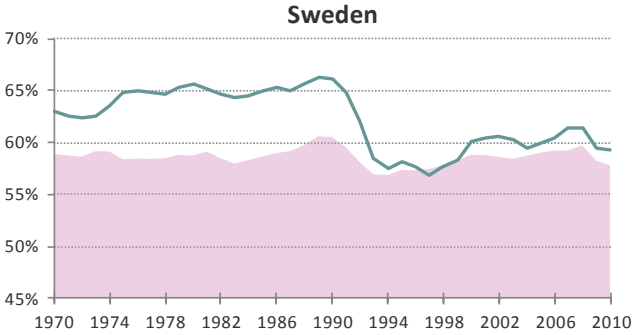
The employment ratio in **Germany** was consistently below-average over the four decades considered, with the gap tending to grow over much of the period before narrowing somewhat in the last decade.

It fell from 56.6 per cent in 1970 to a low of 50.6 per cent in 1983. Subsequent growth resulted in a post- reunification peak of 55.5 per cent in 1991, before the ratio once again declined to 50.6 per cent in 2004. As noted, Germany subsequently outperformed many of the countries discussed here, with the ratio rising to 54 per cent in 2008 and remaining flat during the recession.



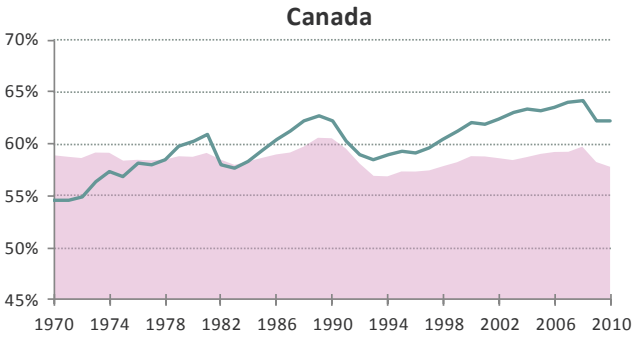
The employment ratio in **France** fell steadily from 56.1 per cent in 1970 to a low of just 50.5 per cent in 1997. It was subsequently flat, ending the period at 51.2 per cent, easily the lowest level among the ten countries set out here.

As such, the gap between the French ratio and the ten country average grew over the period from 2.9 percentage points to 6.6.



The pattern in **Sweden** looks much like the Finnish one, although with a less dramatic drop in employment in the 1990s and a slower subsequent recovery.

The ratio rose from 63.1 per cent in 1970 to 66.2 per cent in 1989. After falling to a low of 57.5 per cent in 1994 (still above the ten-country average), it reached a new peak of 61.4 per cent in 2008 and ended the period at 59.3 per cent, the 5th highest rate recorded.



Nowhere has the employment ratio grown more consistently than in **Canada**. It rose from a below-average level of 54.5 per cent in 1970 to an above-average peak of 64.1 per cent in 2008.

Despite falling during the subsequent recession, the ratio of 62.3 per cent in 2010 was the second highest recorded.

Notes: The employment-population ratio represents the proportion of the working-age population that is employed. The data is primarily sourced from the *Bureau of Labor Statistics* and is therefore adjusted to comply with US definitions of employment and working-age. *Employment* includes all persons who, during the reference week: worked at least 1 hour as paid employees, worked in their own business, profession, or on their own farm, or worked at least 15 hours as unpaid workers in a family-operated enterprise, and all those who did not work but had jobs or businesses from which they were temporarily absent due to vacation, illness, bad weather, childcare problems, maternity or paternity leave, labour-management dispute, job training, or other family or personal reasons, regardless of whether they were paid for the time off or were seeking other jobs. Each employed person is counted only once, even if he or she holds more than one job. Persons whose only activity consisted of work around their own house (painting, repairing, or own home housework) or volunteer work for religious, charitable, and other organizations are excluded. *Working-age population* is more specifically known as the civilian non-institutional working-age population: "civilian" refers to persons who are not on active duty in the military; "non-institutional" refers to persons who are not in institutions, such as prison inmates or those in a mental institution; and "working-age" refers to persons 16 years of age and older.
Data for Finland is sourced from the ILO *comparable employment dataset* and is therefore based on a slightly different definition. However, the effect of this on the figures produced is negligible.

Sources: ILO, *Labour Statistics Database*; ONS, *Labour Market Statistics*, Table A.10; Australian Bureau of Statistics

A2 Definitions and data sources

As set out in the notes to Figure A1 and Table 1, the data presented in this report – particularly that which relates to earnings – contains a number of differences in coverage and definition at the national level which mean that direct comparisons across countries cannot be made. In each instance, however, the data should be internally consistent.

Most of the data was obtained from the OECD Stat database, which sources its figures in turn from national returns. The two exceptions were Sweden and France: in both instances we used alternative median earnings data. In relation to Sweden, anomalies in the OECD Stat median earnings figures meant that we instead sourced data directly from Statistics Sweden. In relation to France, we are grateful to Laurence Rioux at INSEE for providing us with the gross earnings data that we were unable to access from OECD Stat. We used nominal GDP and earnings data in all instances, choosing to adjust the figures ourselves using the relevant GDP deflators, rather than using already-deflated data.

Notwithstanding these various precautions, the reader should be aware that the quality and availability of international earnings data differs considerably. Some countries have routinely collected data for over a century, while others hold much shorter and less comprehensive series. Exclusions of certain workers from the data vary by country and in some instances – particularly France and Japan for example – are significant. Below we set out the coverage of the earnings data in each (non-UK) country in turn.

Australia

The data covers the period 1975 to 2009, with a gap in 2006. It records **gross weekly earnings** in the main job (all jobs prior 1988) of all full-time employees. The Australian Bureau of Statistics collects the data in an annual household survey. The survey relates to all workers aged 15 and over – excluding the armed forces – and the sample results are reweighted using population scales.

Canada

The data covers 1997 to 2009, and records **gross weekly earnings** of all full-time employees. It is collected by the Analytics Studies Branch of Statistics Canada and derives from numerous surveys.

Denmark

The data covers 1980 to 1990 and 1996 to 2008. It is derived by Statistics Denmark from the gross annual earnings recorded in tax returns and hours worked figures captured by social security data, thereby producing **gross hourly earnings** among full- and part-time employees. Workers earnings less than 80 per cent of the minimum wage are not included, but all other workers over the age of 15 and liable for tax are included.

Finland

The data covers 1977 to 2008, with gaps in 1981 and 1985. It is taken from the Income Distribution Survey and records **gross annual earnings** of full-time full-year workers. The data combines a rotated panel – where a household is visited twice over a two year period – with administrative data derived from tax registers. There is a 20 per cent non-response rate associated with the panel design, but the data is weighted to compensate for this.

France

The data covers 1970 to 2008 and was provided by Laurence Rioux of the National Institute of Statistics and Economic Studies (INSEE) because the data deposited with OECD relates to net earnings only, and is subject to an inconsistency associated with the shift from the Franc to the Euro. The data records **gross annual earnings** among full-time, full-year employees. It is collected via the Annual Declaration of Social Data (DADS), which companies must complete by law, and covers private sector employees only. The data for 1981, 1983 and 1990 represent INSEE estimations.

Germany

Data from 1984 to 1990 relates to West Germany; unified German data covers the period 1991 to 2008. Across the entire period the figures record **gross monthly earnings** among full-time employees, as collected from the German Socio-Economic Panel.

Japan

The data covers 1975 to 2009 and records scheduled **gross monthly earnings** among regular, full-time employees, omitting overtime and annual special cash earnings. The data are collected in the Basic Survey on Wage Structure, which omits organisations with fewer than ten employees, along with the public sector, agriculture, forestry and fisheries, private household services and foreign embassies. Irregular workers – who are thought to comprise up to one-third of the overall workforce – are also excluded.

Sweden

The data covers the years 1975, 1980 and 1985, along with the period 1990 to 2008. The **gross monthly earnings** data is derived by Statistics Sweden and incorporates a variety of payment elements, including fixed salaries and fixed allowances, incentive pay, contractual bonuses, compensation for contingencies and emergencies, payments for shift work and unsocial hours and other cash compensation. All full-time employees are covered.

US

The data covers 1970 to 2009 and records **gross usual weekly earnings** among all full-time employees. The series is derived from the US Bureau of Labor Statistics' annual Current Population Survey and contains no exclusions.

A3 Labour productivity and pay

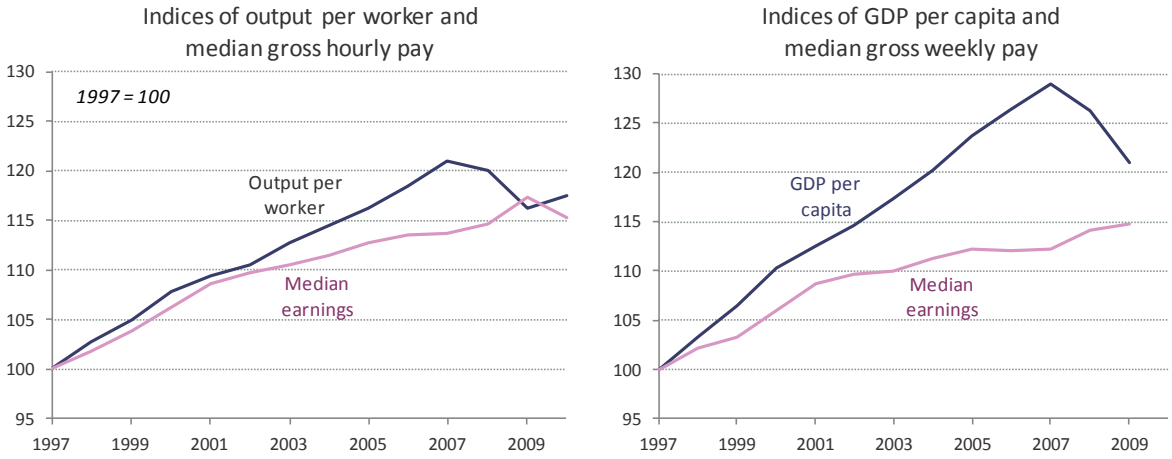
As noted in Chapter 1, despite the internal consistencies of the data used in relation to each country in Figure A1, the basic comparison of economic growth with median earnings contains key weaknesses on both sides of the equation.

- First, because of a lack of good quality data over a reasonable timeframe the earnings figures used in the analysis cover weekly, monthly and annual periods, but not hourly (other than in the case of Denmark, though even here the hourly data is derived rather than directly recorded). They therefore do not isolate the impact of changes in pay from alterations in working hours. For example, the failure of median pay to keep pace with economic growth could be explained by a rise in national output that was primarily associated with increased working hours among workers at the top and/or bottom of the earnings distribution, rather than those in the middle.

- Secondly, as the ratio of workers to the total population changes (both because of variations in employment levels among working-age adults and changes in the size of this working-age population relative to the overall population), so will GDP per capita and labour income per worker diverge. For example, if GDP and the number of workers remains unchanged but the number of non-workers (retired adults and children for instance) declines, then GDP per capita will increase even though rewards per worker do not.

To indicate some of the effects of these issues, Figure A7 plots GVA per worker (i.e. labour productivity) against median hourly wages in the UK among all workers (i.e. full-time and part-time) in the years for which we have data, and compares this with the appropriate section of the GDP per capita and median earnings chart that featured in Figure A1.

Figure A7: Comparison of relationship between labour productivity and hourly pay with relationship between economic output and weekly pay: UK 1997 – 2010



Notes: Output per worker is calculated at the whole economy level and is the ratio of gross value added (GVA) at basic prices and Labour Force Survey (LFS) total employment. Hourly earnings include overtime payments and cover full-time and part-time employees on adult rates whose pay for the survey pay-period was not affected by absence. Gross weekly earnings cover full-time workers only.

Sources: OECD Stat; ONS Time Series A4YM; ONS, ASHE

The comparison shows that the breakdown in the relationship between economic growth and median pay that was clearly evident in Figure A1 appears less stark when using productivity data.

As noted in Chapter 1, this is the first of a series of reports on the relationship between economic growth and gains in material wellbeing. A later paper in the series, from Professor John van Reenen of the LSE, will look more specifically at the concept of a 'decoupling' of growth and productivity, defining specific types of decoupling that have and have not taken place in both the US and UK. This will allow a clearer understanding of the specific aspects of the 'growth-living standards relationship' that have and have not changed over time.

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