Inequality in Scotland:

trends, drivers, and implications for the independence debate

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Executive Summary

What is the level of income inequality in Scotland? How does income inequality in Scotland compare to the rest of the UK, and to other OECD countries? How has income inequality in Scotland changed over time? What has caused inequality to change, and how effective is the tax and benefit system at mitigating inequality? This paper seeks to answer these questions, and draw messages for the Scottish independence debate.

Key points

1. By international standards, the inequality of *gross* earned income (measured before the effects of taxes and benefits) in Scotland is relatively high. Inequality is much higher in Scotland than in the Nordic countries, although there is some evidence that inequality in the Nordic countries has increased slightly more rapidly than in Scotland since the mid-1990s.
2. Since the mid-1990s there has been relatively little increase in inequality in Scotland across most of the distribution.
3. However, inequality at the extreme ends of the distribution has increased in the last decade. The incomes of the top 1-2% of earners have increased compared to the average. At the same time, those in the bottom 5-10% of the earnings distribution have fallen further behind the average.
4. Much of the increase in inequality has been driven by increased variability in working time. This is particularly the case in lower-paying occupations, where there has been a significant increase in part-time working. Although this has increased inequality, the welfare implications are unclear because some workers may prefer shorter hours.
5. The Scottish labour market became increasingly polarised between 2001 and 2010. This means there while the share of higher paying and lower paying jobs increased, the share of middle-wage jobs fell, contributing to inequality growth.
6. There has been virtually no increase in *net* income inequality in Scotland (after taxes and benefits are taken into account) since 1997. Increased government transfers, particularly to families with children and the elderly, have offset the small increases in earned income inequality that occurred.

Background

Scotland is an unequal society and those in favour of constitutional change argue that increases in inequality have been driven by UK government policy; that reduced inequality is desirable; and that only under independence will it be possible to introduce policies that will narrow the gap between the rich and poor. An example of this argument is the "Common Weal" vision for economic and social development in Scotland, which would involve more radical changes to the welfare and taxation systems than seem likely under Westminster governance.

The constitutional debate has thus far focussed on the desirability of reducing inequality rather than on the evidence about its level and how it has changed over time. This paper seeks to redress this balance. It does not address arguments about the desirability of reducing inequality, but rather focuses on the measurement and explanation of trends in Scottish inequality. Our motive is to ensure that the broader debate is grounded in evidence.

Our approach involves an examination of inequality measures applied to Scottish data and a discussion of the determinants of inequality. We focus on *income* inequality. There are many other inequalities in Scotland such as those of wealth (and in particular the ownership of land), of opportunity, of health and of access to public services. However, the inequality of income is pervasive and has a clear impact on the ability of individuals to consume goods and services. It is also an easily measurable form of inequality and, since different forms of inequality are frequently correlated, income inequality may stand as a proxy for other dimensions of inequality. Inequality of income is also the almost unique focus of the international literature on inequality, which facilitates international comparisons.

Our analysis makes the important distinction between *household* and *individual* income inequality and between *gross* and *net* income. Individual incomes are dominated by the interaction of the individual with the labour market: the inequality of *earned* income is the primary driver of overall income inequality in most countries. Household *net* income determines the volume of goods and services that can be consumed by the household. The translation from gross individual incomes to household net income involves both the aggregation of incomes within the household and the subtraction of taxes and the addition of benefits and other transfers. Hence the difference between gross and net measures of inequality indicates the extent to which the national tax and benefit system redistributes income from rich to poor and thus reduces income inequality.

Trends in inequality

So what has happened to income inequality in Scotland? Following a rapid rise in the 1980s, earnings inequality increased relatively slowly between 1997 and 2012. The rise in inequality during the 1980s coincided with a substantial change in the structure of Scottish industry brought about by a decline in heavy industry and in manufacturing in general. Government policy may have played some part in this, partly due to monetary policy, but also through, for example, changes to trade union legislation. But technological change and globalisation also had key roles in making the Scottish labour market became more polarised, with fewer intermediate level jobs due to computerisation and competition from emerging markets.

Many other developed countries experienced similar declines in manufacturing, in the latter part of the twentieth century, so UK economic policy is not the sole explanation of what happened in Scotland. In high wage occupations not subject to external competition or technological change, the

share of jobs and hours worked increased. And while there was an increase in the share of workers in low-wage occupations, increased competition for these jobs from displaced middle-skill workers kept wages low. The net effect of shifts towards the extremes of the income distribution resulted in increased earnings inequality.

However, increased inequality of earned income was largely offset at the household level through the redistributive effects of the tax and benefit system during the late 1990s and 2000s. Higher taxes and higher benefits reduced the gap between rich and poor households. The inequality of household net income has not increased overall since 1997, although it has continued to increase in the tails of the distribution (the richest and poorest households). The UK tax system has done little to stem a continuing rise in the share of income going to the top 1-2% of earners.

Inequality in Scotland is lower than in the rest of the UK (rUK), but only because of particularly high levels of inequality in London. Inequality remains high in Scotland and rUK compared to many other OECD countries, but the gap has closed since the 1990s, in part due to reform of labour market institutions and to the effects of globalisation.

Policy responses

The Scottish Government has recently expressed concern that inequality will inhibit long-term growth prospects. There is also an argument that inequality inhibits short-run growth when demand is weak, as at present. This is because the poor, who have a high propensity to consume, suffer disproportionately during recessions, and weak consumption growth defers recovery.

An independent Scotland would gain significant levers with which it could potentially address inequality. These would include control over the benefits system and wider powers over taxation. These would be in addition to the powers it already has in relation to education and skills which are likely to play a vital role in influencing inequality in the long-run. An independent Scotland would have scope to reform the UK's existing tax and benefit system to remove disincentives to work faced by some groups, and to reduce inequality by building greater progressivity into the system. There is some limited evidence that the Scottish electorate may be more supportive of such reform than voters in other parts of the UK. However, due to the potential mobility of both capital and labour in a small open economy, the Scottish Government may face tradeoffs between inequality reduction and its other policy objectives.

1. Introduction

Inequality is at the centre of the debate on Scottish independence. In making a case for independence, the Scottish Government (2013) argues:

> '*Scotland is currently part of a UK economic model and society which is one of the most unequal in the OECD. Inequality within the UK has increased in recent decades. Such patterns of inequality will continue to have a negative impact on growth and prosperity over the long-term*'.

Independence, it is argued, would give the Scottish Government access to the policy levers necessary to address inequality. The types of policy intervention envisaged are not specified.

While inequality has been a continuing interest among economists, the recent recession has focussed interest on its evolution, its impact on economic performance, and the extent to which it is susceptible to policy intervention. Some argue that policy can be effective in reducing the consequences of inequality. Stiglitz (2013a) argued:

> "I see us entering a world divided not just between the haves and have-nots, but also between those countries that do nothing about it, and those that do. Some countries will be successful in creating shared prosperity — the only kind of prosperity that I believe is truly sustainable. Others will let inequality run amok. In these divided societies, the rich will hunker in gated communities, almost completely separated from the poor, whose lives will be almost unfathomable to them, and vice versa."

The opposite view was set out by Seldon (2007):

> "Inequality is a necessary result of allowing people to advance as individuals in the market. Measures to enforce equality slow down progress and innovation, harming everyone."

Clearly there are radically different views regarding the costs and benefits of inequality (Box 1). However, the evidence suggests that the drivers of inequality include a mix of economic (technological change, globalisation and labour market participation, for example) and societal (such as changes to household structure and family and living arrangements) influences that often transcend national boundaries and cannot easily be manipulated by governments. During the 2000s, income inequality grew most rapidly among the traditionally low-inequality Nordic countries that are often seen as operating the type of social-democratic model to which an independent Scotland aspire.

It is therefore not immediately clear whether, or in what way, an independent Scotland might be able to exercise a sustainable fiscal policy that would also drive a significantly different inequality path from the rest of the UK, or indeed from the rest of the EU. But first, we must establish what is the level of inequality in Scotland and how has it evolved. We therefore begin by examining recent trends in inequality in Scotland and the rest of the UK (rUK). We consider whether levels of inequality – or changes to the level of inequality – are fundamentally different in Scotland from the rUK, and whether the drivers of inequality differ between Scotland and rUK. We also consider future prospects for inequality in the UK and how these prospects might be different for an independent

Scotland, or a Scotland with significantly more fiscal autonomy than is currently devolved to the Scottish Parliament.

The paper is structured as follows. Section 2 reviews trends in inequality in Scotland within the context of changes in inequality in the rest of the UK (rUK) and across other OECD countries. Section 3 looks at the factors which drive inequality. Section 4 considers what policy options would be available to an independent Scotland to tackle inequality. Section 5 concludes.

Box 1: The inequality debate

As implied in the introduction, the debate on income inequality has examined the trade-off between maintaining incentives in the labour market and notions of fairness between members of a community who share some common principles. The effects of inequality on growth have also been the subject of intense debate. The conventional view is that some level of inequality is necessary to provide incentives to work effort. But inequality may have negative effects on long-term growth if it reduces poorer individuals' ability to invest in human capital because, for example, the poor are unable to access educational opportunities, (Barro, 2000; Aghion et al. 1999).

Debate around the causes and consequences of inequality have intensified during the financial crisis, witnessed by the level of debate surrounding publications such as the Spirit Level (ref) and The Price of Inequality (Stiglitz 2013b). A growing body of literature argues that increased inequality contributed to the financial crisis of the late 2000s, as disproportionate income gains among the most well-off were invested in the financial markets, increasing the supply of credit to lower income households who became increasingly indebted as they attempted to maintain their standard of living and relative social status in the face of declining real incomes (Wisman 2013; Lucchino and Morelli, 2013).

The extent to which inequality is seen as justifiable depend on whether it genuinely reflects productivity differentials (Mankiw 2013; Goldin and Katz, 2008) or whether it represents rent-seeking (e.g. monopoly power, trade restrictions, favourable regulation) and command over political power by the rich (Stiglitz, 2013b; Wisman, 2013). It is also likely to depend on the extent to which an increase in inequality is driven by increases in permanent, rather than transitory, incomes (Jenkins, 2011). Rising inequality due to increased transitory inequality is consistent with income mobility, perhaps due to greater job turnover, with households being able to smooth income differences over time through borrowing. On the other hand, if rising inequality is due to increased permanent income inequality, then it is likely to have been driven by factors that permanently shift the fortunes of some groups in society, (DeBacker et al., 2013).

Inequality may also have negative impacts on population health and well-being (Marmot, 2013; Lorgelly and Lindley, 2008; Hildebrand and Van Kerm, 2009), although such links are not fully understood. A concern is that the increases in income inequality are a sign of declining social mobility (Portes 2011) and a widening of the rungs of the social ladder which are 'storing up trouble for the future' (Social Mobility and Child Poverty Commission 2013).

Despite the lack of a clear link between inequality and growth, health or well-being, reducing inequality is often seen as desirable for reasons of social justice. The OECD argues that reducing inequality will ultimately improve economic performance, 'even if the relationship is not straightforward' (OECD, 2011).

2. Trends in inequality in Scotland

This section focuses on quantitative measures of inequality in Scotland. These can all be related to the *distribution* of income. Different measures of inequality focus in different ways on how far the actual distribution of income differs from a distribution where everyone earns the same. Different measures have quite different characteristics and it is important to understand the implications of these characteristics in interpreting results. For example, one might reasonably ask whether a measure of inequality increased when income is transferred from a poor person to a richer one. Box 2 describes some of the most common measures of income inequality.

Box 2: Measures of income inequality

The ratio of the 90th percentile of the income distribution to the 10th percentile is a common and relatively easily understood measure of inequality. It is also frequently quoted in international studies. Imagine ordering all workers in Scotland by the size of their weekly income. This '90/10' measure is simply the ratio of the weekly earnings of the worker whose income is greater than 90 per cent of all other workers to the weekly earnings of the worker whose pay is greater than only 10 per cent of other workers. The larger this ratio, the greater the spread between rich and poor, and hence the greater level of inequality.

The 90/10 ratio will not change if a small amount of income is transferred from someone at the 20th percentile to someone at the 80th percentile. The choice of the 90th and 10th percentiles thus suggests a concern for the fortunes of the relatively rich and the relatively poor rather than those in the middle of the income distribution. These groups are described as being in the "tails" of the distribution, which means they are close to the extremes of wealth and poverty, respectively.

On occasion we use other ratios such as the 99/1 ratio which measures the ratio of earnings at the 99th percentile to those at the 1st percentile and so captures the difference in earnings between the very richest and very poorest in society who are at the extremes of the 'tails' of the income distribution.

We also refer to 'upper-tail inequality', which could be measured as the ratio of the 90th percentile of the income distribution to the median (50th percentile); and 'lower-tail inequality', which could be measured as the ratio of the median (50th percentile) to the 10th percentile of the income distribution. These capture, respectively, inequality at the *top* and at the *bottom* of the income distribution. We summarise these measures as "90/10", "90/50" and "50/10".

Another measure that we discuss is the "Gini coefficient", which is an overall measure of inequality that is affected by *all* incomes rather than those at a specific position in the income distribution. No matter where they occur in the distribution. It effectively measures the area between the actual income distribution and an idealised distribution where all incomes are equal: the larger its value the more unequal is the distribution. The Gini coefficient is sensitive to changes around the middle of the income distribution rather than in the tails.

Inequality of Individual Incomes

Figure 2 shows the ratio of the 90th to the 10th percentile of weekly gross pay for full-time workers in Scotland for the period from 1975 to 2012 based on both the New Earnings Survey (NES) and the Annual Survey of Hours and Earnings (ASHE) which replaced the NES in 2004. It shows that the main increases in inequality took place in the 1980s; Inequality among full-time women has hardly changed since 1990, although among full-time men there has been a continuing, but slow, increase in inequality since 1990. Given this timing, it is hard to avoid the conclusion that the major increases in inequality that have taken place over the last few decades were related to the industrial restructuring that took place during the 1980s.

Figure 2 gives more detail of the 90/10 ratio in Scotland over the shorter period from 1997 to 2012 for each of three measures of earnings: the hourly wage of full time (FT) workers; weekly earnings of full-time workers, and weekly earnings of all workers (part-time (PT) and FT). Since 1997, hourly wage inequality has remained static for males and declined slightly for females. Weekly earnings inequality among full-time workers increased slightly for females and slightly more for males.

At the start of the period, weekly earnings inequality was slightly less than hourly wage inequality, suggesting that low-income workers tended to work longer hours than higher wage workers, partly compensating for their lower hourly wages. The difference between hourly and weekly inequality has narrowed over time. The increase in weekly earnings inequality, combined with largely static hourly wage inequality, suggests that changes in the distribution of hours worked, rather than changes in relative wages, have driven the increase in inequality among FT workers. This issue is explored further below.

Figure 1: 90/10 weekly earnings ratio among full-time workers: Scotland 1975-2012

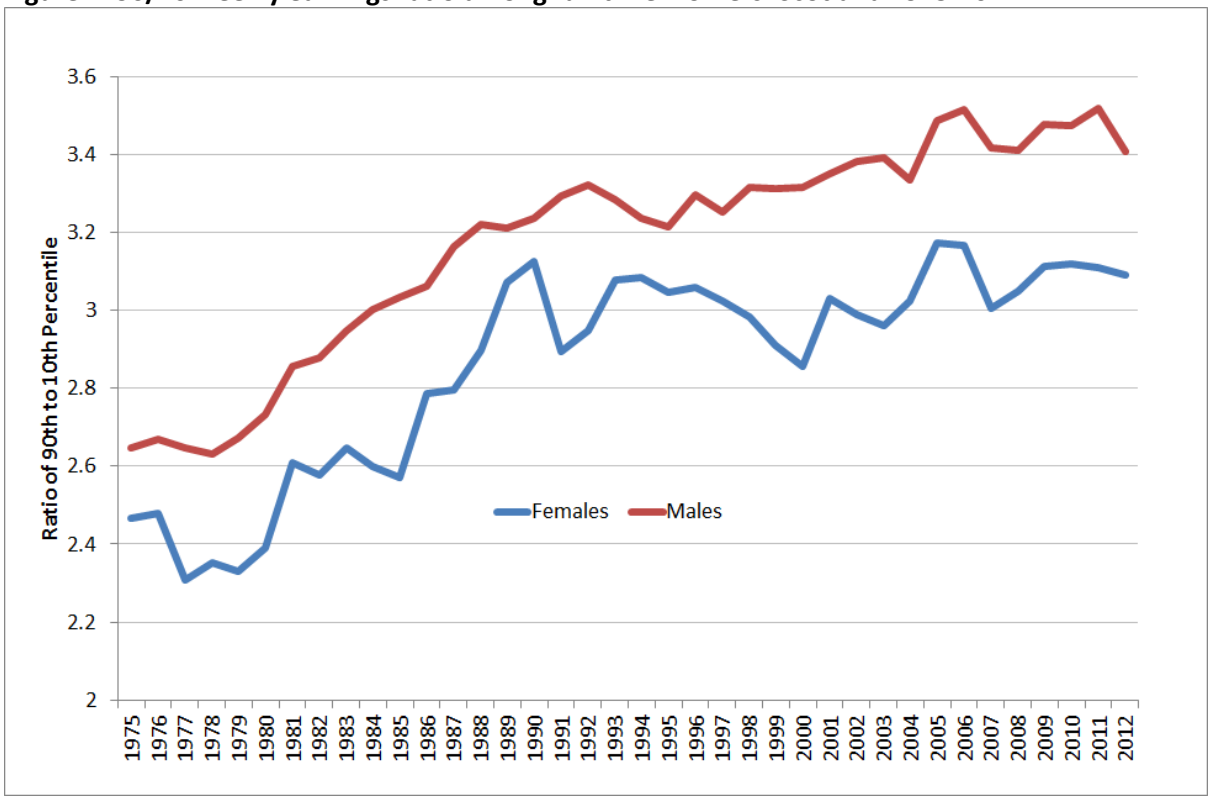
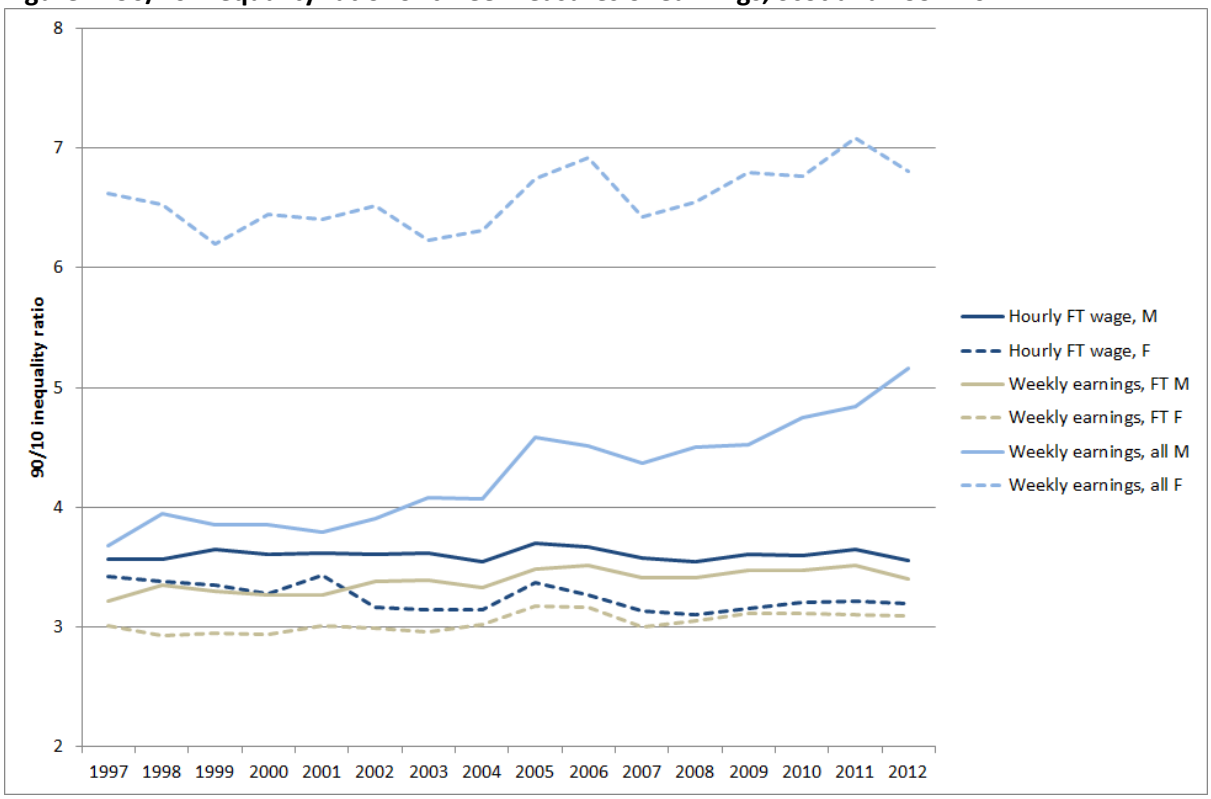


Figure 2: 90/10 inequality ratio for three measures of earnings, Scotland 1997-2012



Sources: New Earnings Survey and Annual Survey of Hours and Earnings

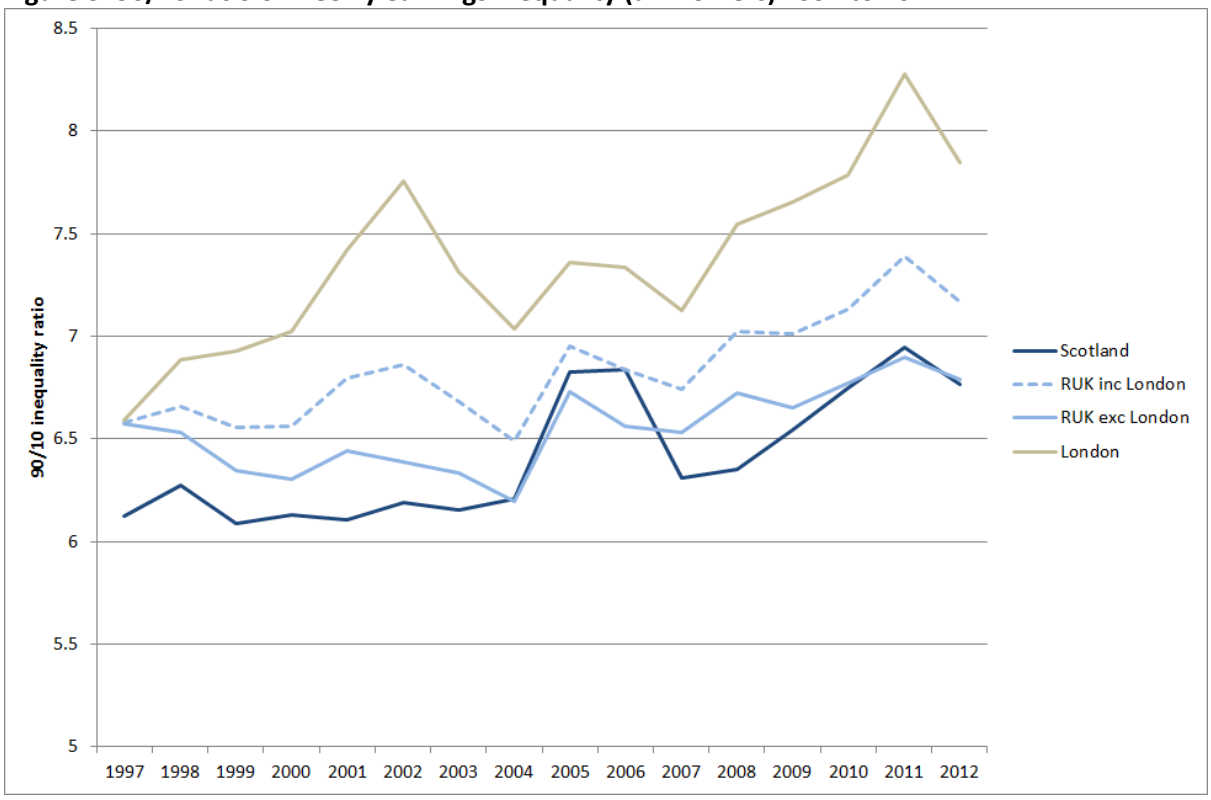
Weekly earnings inequality among all workers is higher than among full-time workers alone, due to the greater variation in hours worked when part-time workers are included in the calculation. Male

weekly earnings are more unequally distributed than female earnings, and there has been a relatively rapid increase in male weekly earnings inequality since 1997, and particularly since 2004. This has been driven by increased variability in hours worked by men. Between 1997 and 2004, men at the 90th percentile of the distribution of weekly working hours worked 1.5 times as many hours as men at the 10th percentile of weekly hours of work; since 2004 however this ratio increased steadily so that by 2012 a male at the 90th percentile of the distribution of weekly working hours worked twice as many hours as a male at the 10th percentile. This growth in the variation of hours worked has come because of an increase in the number of men taking part-time employment. Among full timers, hours worked have hardly changed, and given that most men work full-time, the ratio of male weekly hours at the 90th percentile to the median has also hardly changed.

It is not clear how to view the welfare implications of an increase in inequality driven by increased variation in hours worked. If more men are working shorter hours because this is their choice, then it is difficult to take a negative view of the associated increase in inequality. However, if those men working fewer hours would like to work more hours (and there is some evidence of this), then the interpretation might be that increased inequality is being driven by a lack of effective demand in the labour market, which has a negative effect on welfare .

How do trends in Scotland compare to those in rUK? Figure 3 compares gross weekly earnings inequality in Scotland and rUK. Inequality in Scotland appears to be lower than in rUK. However, this result is driven by very high levels of inequality in London and the southeast of England (SE). If London and the SE are excluded, then the level and trend of gross weekly earnings inequality in Scotland is very similar to that in the remainder of rUK. Hourly wage inequality (not shown here but available on request) is almost identical in Scotland to the level in rUK excluding London.

Figure 3: 90/10 ratio of weekly earnings inequality (all workers) 1997 to 2012



Source: Annual Survey of Hours and Earnings

The analysis thus far has considered measures of inequality based on the 90th and 10th percentiles. This may hide changes in inequality at the extreme tails of the income distribution. Several authors have documented a trend in recent decades towards increased inequality being driven by the very highest earners, particularly in English-speaking countries (Picketty and Saez, 2006; Bell and van Reenan, 2010; Cribb et al. 2012).

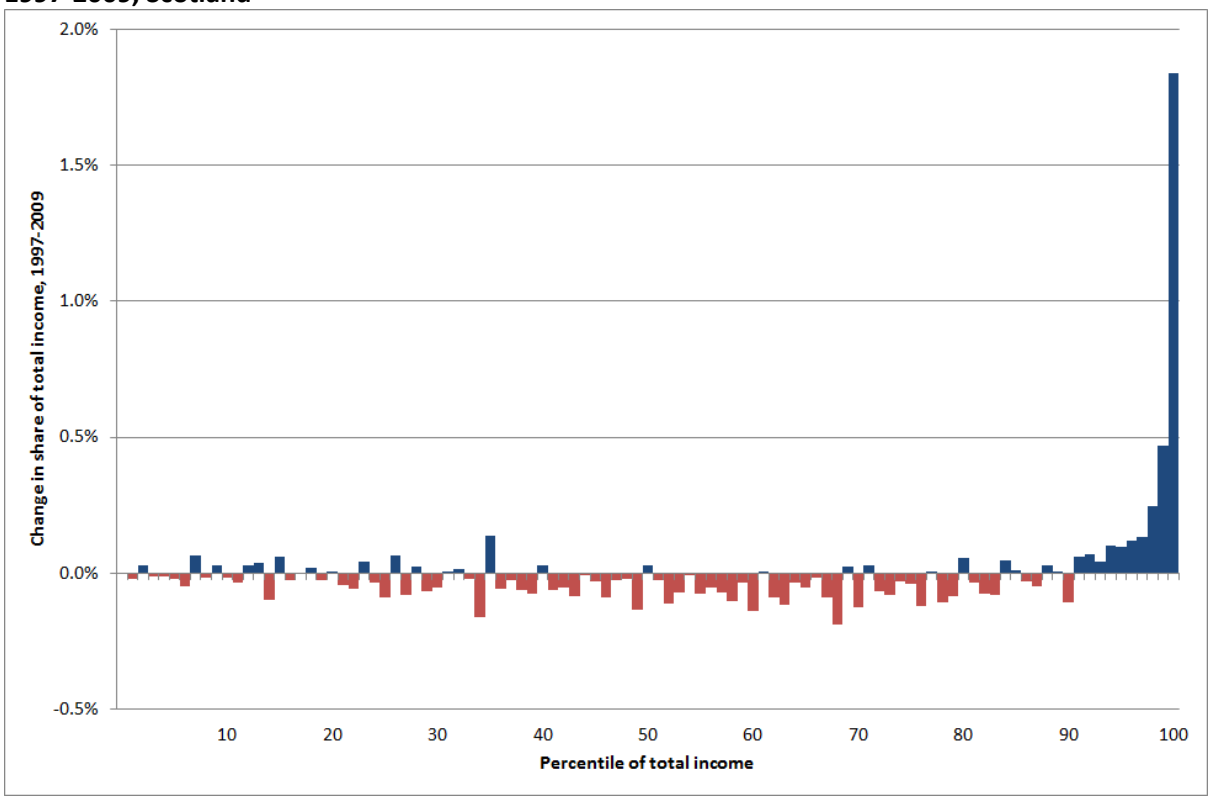
To examine income inequality at the extremes of the tails of the income distribution, we switch from the ASHE dataset to the Survey of Personal Incomes (SPI). The SPI is constructed by Her Majesty's Revenue and Customs (HMRC) from income tax data. It over-samples high earners to provide more accurate statistics on this group. It also measures annual incomes which can be used to identify the impact of annual bonuses. As highlighted by Bell and van Reenan (2010), the growth in the share of *annual* earnings among the highest earning 1-2% is much more pronounced than the growth in top earners share of *weekly* earnings, as the former includes such bonus payments.

We use the SPI to estimate the 99/1 ratio of inequality among income tax payers, for all sources of income (including employment and non-employment income) (Table 1). For Scottish males, this ratio increased by 20% between 1997 and 2009, from 17 to 20. This is similar to the change in rUK excluding London and SE, where the ratio increased from 18 to 21. This increase was driven entirely by increasing upper-tail inequality, with lower tail inequality actually falling. Between 1997 and 2009, the earnings of the top 1% have also pulled away from the earnings of those at the 90th and 95th percentiles. The very rich have become even richer relative to other taxpayers.

The trend in income inequality in the extreme tails of the distribution is similar for women, although the ratio is substantially lower. The 99/1 ratio increased from 10 to 11 in Scotland, similar to the increase in rUK, again driven almost entirely by changes in upper-tail inequality.

The concentration of these changes in the top 1-2% of earnings and nowhere else in the income distribution is shown in Figure 4 which shows the *change* in the share of income for each percentile of the income distribution between 1997 and 2009. The richest 1% of Scotland's adult population earned 6.3% of total pre-tax incomes in 1997. This share increased by 49% to 9.4% in 2009. In rUK excluding London, the income share of the top 1% of earners increased from 7% to 10% between 1997 and 2010, while in London, the share of the top 1% of earners increased from 8 to 14%.

Figure 4: Change in share of total income among taxpayers, by percentile of taxpayer income, 1997-2009, Scotland



Source: SPI

Table 1: Measures of income inequality at the tails of the distribution

	99/1			99/50			50/1			99/90			99/95		
	1997	2009	Change	1997	2009	Change	1997	2009	Change	1997	2009	Change	1997	2009	Change
Males															
Scotland	17.05	20.49	3.44	4.73	6.40	1.68	3.61	3.20	-0.41	2.43	2.83	0.40	1.86	2.10	0.24
rUK	18.01	21.06	3.04	5.42	6.75	1.33	3.33	3.12	-0.21	2.62	2.99	0.37	1.99	2.23	0.23
London/ SE	28.90	41.34	12.44	7.71	11.22	3.50	3.75	3.69	-0.06	3.18	4.18	1.00	2.20	2.77	0.57
Females															
Scotland	10.34	11.36	1.02	4.29	4.61	0.32	2.41	2.46	0.06	2.01	2.15	0.14	1.67	1.75	0.08
rUK	10.56	11.43	0.87	4.57	4.82	0.25	2.31	2.37	0.06	2.06	2.16	0.10	1.69	1.75	0.06
London/ SE	15.08	18.52	3.44	5.28	6.54	1.26	2.86	2.83	-0.03	2.37	2.76	0.40	1.89	2.12	0.22

Notes: Income is measured as gross market income from all sources (employment, self-employment, investments, pension), restricted to taxpayers only.

Source: SPI

Household Inequality: the role of taxes and benefits

We now shift the focus from inequality of individual incomes to inequality of household incomes. This changes the focus from the labour market to the incomes that families use to purchase goods and services, including the effect that taxes and benefits have on household incomes. Individuals generally share their income with other household members. There is relatively little information on how income is distributed *within* the household (Ermisch 2003). Here we rather focus rather on inequality *between* households. This is clearly influenced by the inequality of individual incomes, but also by a variety of household formation factors, such as the increase in the proportion of single-parent and single-adult households, and 'assortative mating' (the tendency for individuals to marry or cohabit with other individuals with similar earnings levels to their own).

The translation from individual to household inequality is complex, and is influenced by changes in household structure such as the trend towards smaller family and household size, increases in the number of lone parent families, and the increasing tendency for people to marry within the same earnings class. Single person households accounted for only 14.1% of all Scottish households in 1961; by 2011 they accounted for 34.7% of all households. This is a very significant change in the composition of Scotland's households. It implies that, through time, there have been fewer incomes within the average Scottish household. Inevitably, such a substantial change in household composition affects measures of household income inequality.

We measure household inequality using data from the Households Below Average Income (HBAI) database, which is collected by the Department for Work and Pensions (DWP). The income measures are "equivalised" by household type: "equivalisation" is the process where income measures are adjusted for household composition (to reflect, for example, the fact that a household comprising two adults and two children with earnings of £500 cannot afford to maintain the same standard of living as a household with the same income but which comprises two adults and no children).

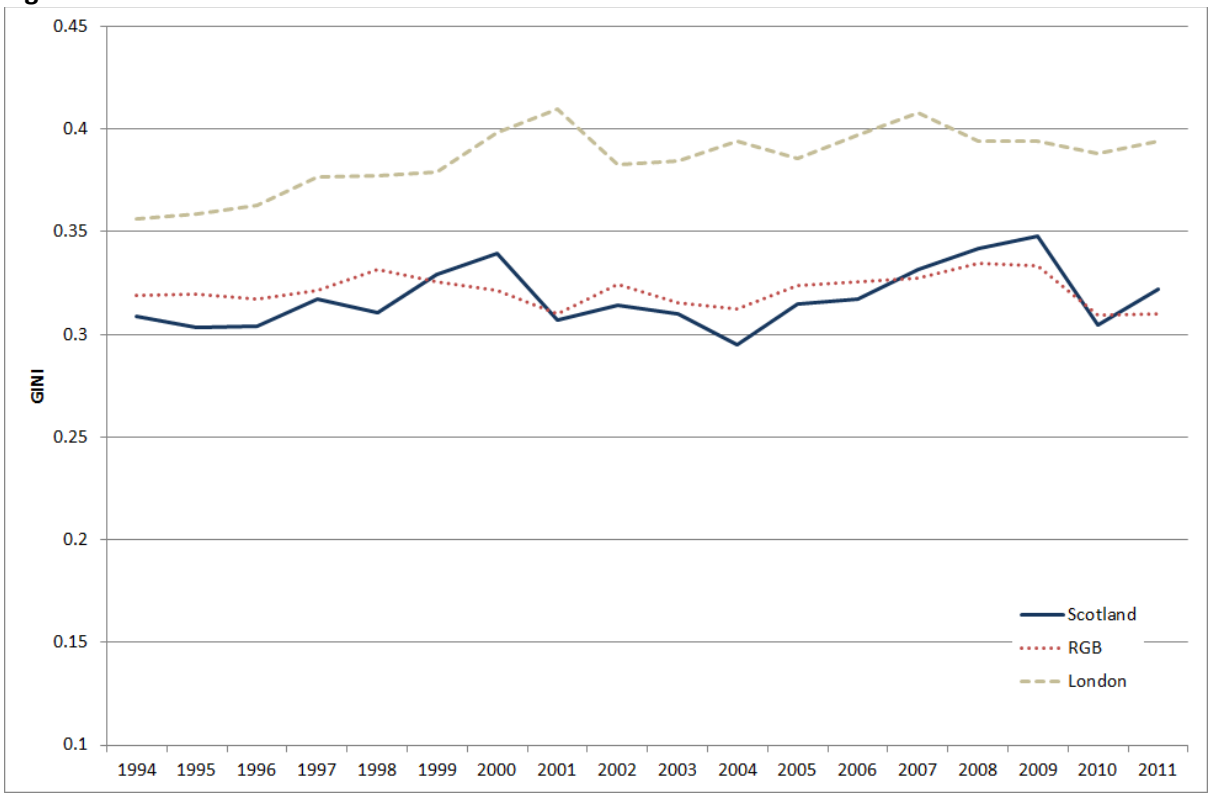
Figure 5 shows that household income inequality net of benefits and taxes remained static between 1997 and 2010 (this figure shows the GINI ratio; the 90/10 inequality ratio for the same income measure tended to decline slightly over the same period; figure available on request). The fact that earnings inequality increased (as shown previously), while net household income inequality has remained static or declined, is due to the effects of the tax and benefit system redistributing income towards families with children, particularly lone parent families, and to pensioner households during the late 1990s and early 2000s (Dickens, 2011; Cribb et al. 2012). There is both a positive and negative interpretation to this story. The positive interpretation is that the benefits system has been effective in mitigating the increase in individual earnings inequality; the less positive interpretation is that, while welfare reform may have increased work incentives among parents, those entering work often were reliant on increases in government benefits to top-up their incomes (Dickens, 2011).

The level and trend of all these measures of inequality in Scotland is virtually identical to that in RGB excluding London and SE[1]. Figure 5 compares the 90/10 inequality ratio for net household income in Scotland, London/ SE and RGB excluding London/SE. The significantly higher level of inequality in

[1] Time series analysis using HBAI has to focus on RGB rather than RUK as some data is not available for Northern Ireland.

London is clear, reflecting both the higher concentration of very high earners and very low-paid work (Dorling, 2012).

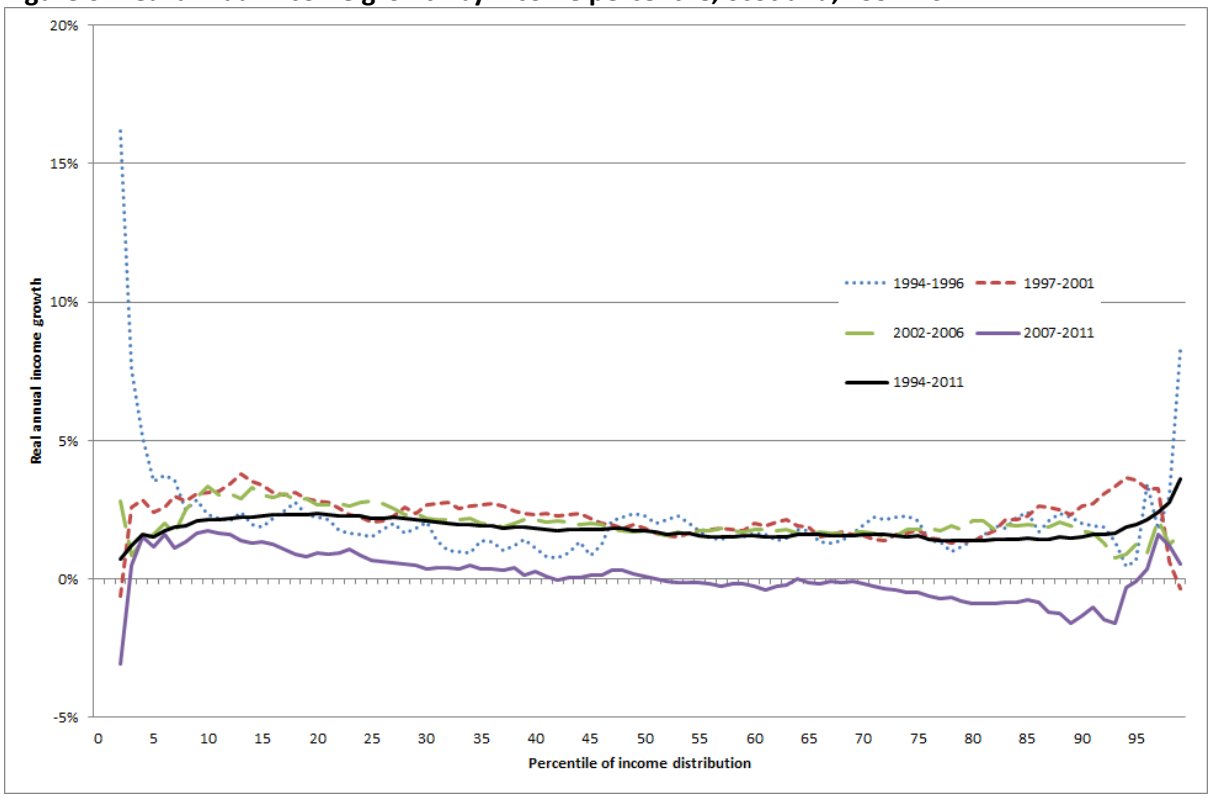
Figure 5: Household net income GINI ratio 1997-2010



Notes: This income measure is net of all taxes and benefits, and is equivalised to take account of the composition of the household. Source: Households Below Average Income (DWP)

Analysis focusing on the 90/10 ratio obscures other subtle changes in the income distribution. Figure 6 shows the average annual change in real equivalised net household incomes for each percentile of the income distribution in Scotland between 1994 and 2011. Over the whole period, there has actually been a reduction in inequality across most of the distribution, with the incomes of the upper half of the distribution generally having increased at a slightly slower rate than those in the bottom half. However, at the very tails of the distribution, inequality has widened, with the bottom 5% of households experiencing slower than average income growth and the top 5% experiencing faster income growth. The recessionary period from 2007/8 through to 2011/12 was characterised by a slight growth in household incomes in the bottom half of the income distribution combined with declining real incomes in the upper half. This explains the apparent fall in household inequality over this period according to the GINI and 90/10 ratio, although note the fall in incomes of the poorest 5% of households and the relatively faster growth of incomes in the richest 5% of households in this period.

Figure 6: Real annual income growth by income percentile, Scotland, 1994-2011



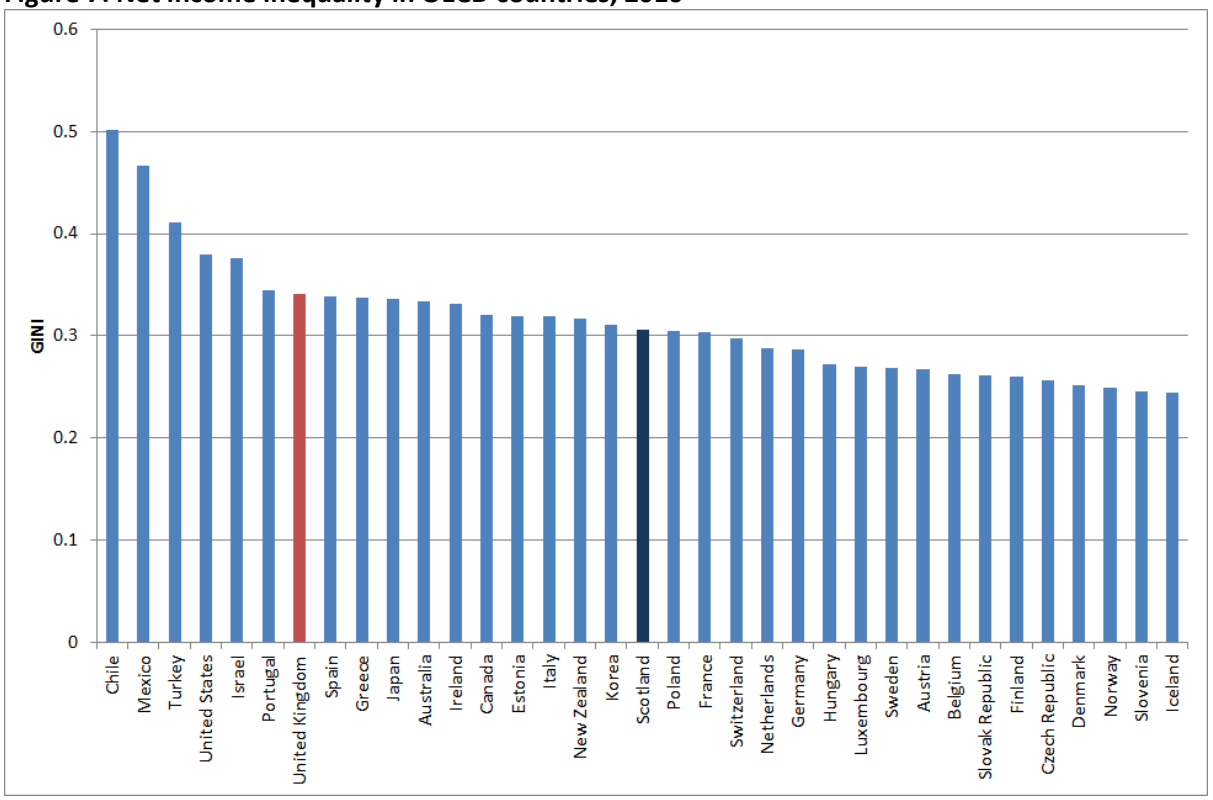
Notes: This income measure is net of all taxes and benefits, and is equivalised to take account of the household composition. Source: Households Below Average Income (DWP)

International context

How do these trends in Scotland and rUK compare with changes in inequality among other developed countries? Inequality has been rising in most OECD countries for the past few decades (OECD 2011). The UK experienced relatively rapid increases in inequality between 1975 and 1990, but has since been rising at a much slower rate (Cribb, Joyce et al. 2012). Since the late 1990s, inequality has increased more rapidly among other OECD countries than it has in the UK, and inequality grew most rapidly among the traditionally low-inequality Nordic countries (OECD, 2011). This leads the OECD (2011) to conclude that 'there are thus tentative signs of a possible convergence of inequality levels towards a common and higher average level across OECD countries'.

Despite this evidence of convergence, inequality in the UK remains high relative to other OECD countries, and the UK is ranked 7th most unequal of 35 OECD countries in relation to net income inequality (Figure 7). As has been discussed, inequality in Scotland is lower than it is in the UK as a whole, largely because of the fact that inequality is particularly high in London. If Scotland was an independent country today, then its level of net income inequality would be roughly equivalent to the median level of inequality among the OECD countries, but higher than it is in the Nordic countries that are often seen as operating the type of social-democratic model that an independent Scotland might wish to follow (Figure 7).

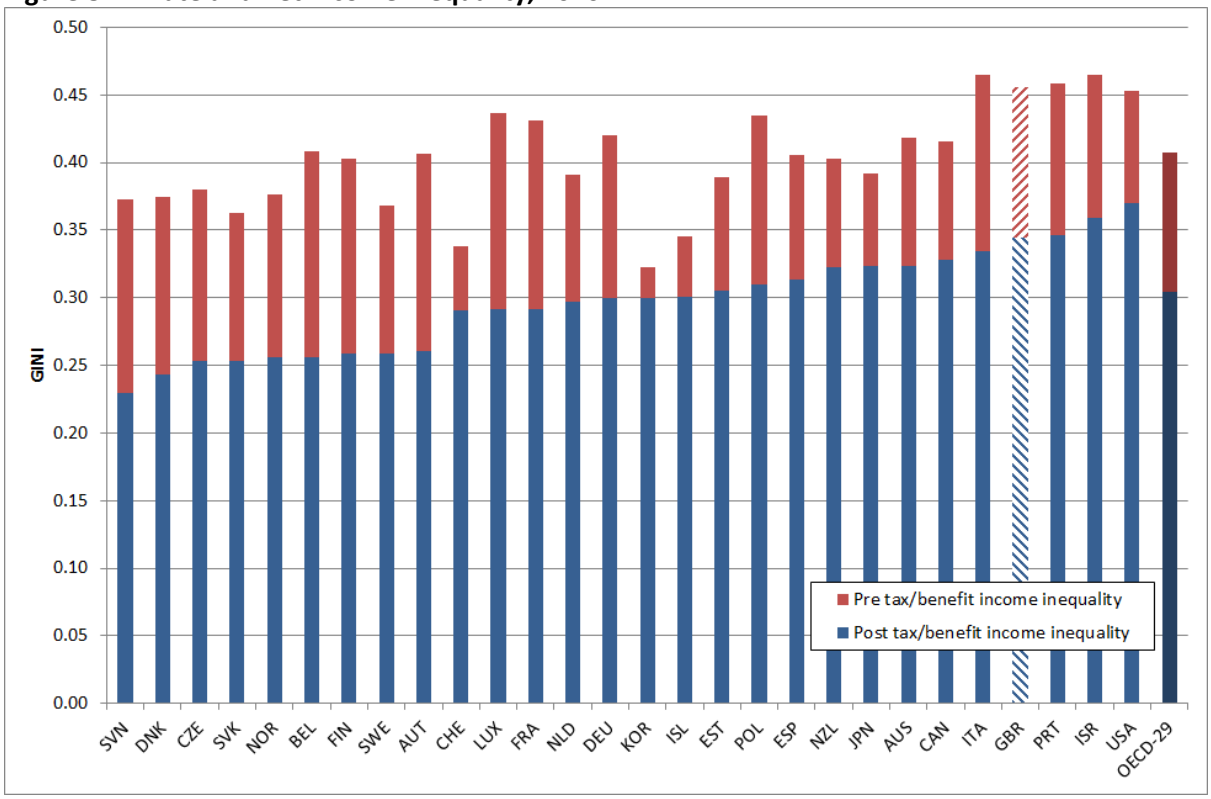
Figure 7: Net income inequality in OECD countries, 2010



Notes: net income inequality for the working age population
Source: OECD, HBAI

To what extent does the UK's relatively high level of net inequality reflect a high inequality of private (gross) incomes, and to what extent does it reflect a relatively un-redistributive tax and benefit system? Figure 8 compares market income inequality and net income inequality in a selection of OECD countries. Market income inequality is less dispersed across countries than net income, suggesting that there is a significant role for governments to play in influencing levels of inequality. In Great Britain, taxes and social transfers have the effect of reducing the market income GINI by 11 percentage points, indicating that the UK tax/ benefit system is slightly more redistributive than for the OECD as a whole (where the effect of taxes and social transfers is to reduce the market income GINI by 10 percentage points). The Nordic countries have lower market income inequality than the UK, but their tax and benefit systems are also more redistributive, reducing the market income GINI by 12, 13, 14 and 14 percentage points in Norway, Denmark, Sweden and Finland respectively. The Nordic countries' relatively more rapid increase in inequality over the past decade is the result of both increasing market income inequality and a reduction in the effectiveness of redistributive policies (OECD 2011).

Figure 8: Private and net income inequality, 2010



Source: OECD, HBAI

3. Labour market drivers of inequality

The main driver of household income inequality in Scotland is clearly the inequality of earned income. Household formation factors play a less significant role. In this section we consider some of the explanations of increased earnings inequality. Recent literature on inequality has emphasised the role of technological change and globalisation, the effects of labour market policies and institutions, and the importance of changes in labour market participation and working practices.

The role of technological change in influencing the demand for skills has received particular attention. During the 1980s, when wage inequality in many countries was increasing rapidly, the prevailing view was that technological change was 'skill-biased'. This meant that its effect was to increase the wages of skilled workers relative to those of the unskilled. However, the so-called skill-biased technical change (SBTC) hypothesis seemed less robust in explaining changes in wage inequality during the 1990s and 2000s, when rising inequality in the top-half of the wage distribution coincided with stable, or in some cases declining, inequality in the lower-half of the distribution.

In response to this, a more nuanced view of technological change in influencing the demand for skill has emerged, sometimes known as the 'routinisation' hypothesis (Levy and Murnane. 2003). The argument is that the jobs for which technology and computerisation can readily substitute for human labour have thus far been found among those semi-skilled jobs that can be 'routinised' (and potentially off-shored). During this period, such jobs were typically found in the middle of the wage distribution. In contrast, technology has been less successful, thus far at least, in replacing tasks

performed by workers at both the top and the bottom of the wage distribution. At the top of the wage distribution, jobs require complex non-routine abstract and cognitive tasks that are complementary to technology. Management and many professional skills fall into this category. Jobs at the bottom of the wage distribution tend to require non-routine manual tasks that are not substitutable by technology, and cannot be offshored due to their non-tradability. Personalised skills in care provision, hospitality and leisure fall into this category.

The more nuanced view of technical change would predict that technical change would lead to a hollowing out of the labour market – with a declining share of middle-wage, middle-skill jobs being replaced by an increasing share of both the highest and lowest wage jobs. For the UK, Goos and Manning (2007) found evidence that such hollowing out did occur during the 1990s, and that this "polarisation" can explain 50% of the rise in upper-tail inequality during that decade. More recent evidence of labour-market polarisation in the UK has been documented by Jones and Green (2009), Lee et al. (2013), and Kaplanis (2007).

In Figure 9, we consider how employment in Scotland (both in terms of the number of jobs and total hours worked) has changed by occupational skill level between 2001 and 2010. This period has the advantage of being covered by a consistent occupational classification. To produce this analysis, we divide the Scottish workforce into separate 81 occupational groups, using the two-digit Standard Occupational Classifications (SOC 2000). We then allocate these occupations into deciles using the occupation's gross hourly median wage in 2002[2]. For each occupation, we then calculate how that occupation's share of jobs and total employed hours changed between 2001 and 2010, and then allocate these changes to the 2001 wage deciles. We are implicitly using the occupation median wage as a proxy for occupational skill-level, following Goos and Manning (2007).

There is clear evidence of polarisation of Scotland's labour market during the 2000s, both in terms of jobs (shown by bars) and hours worked (shown by lines). The top four wage deciles *increased* their share of both jobs and hours worked, whilst jobs and hours declined in occupational wage deciles 3 to 6. The lowest paid two deciles increased their share of hours, but only the second decile increased its share of jobs.

Figure 9 also shows that the share of hours grew more quickly in higher wage occupations than did their share of jobs; this implies that the average number of hours worked per worker must have increased in these occupations. However, although there was an increase in the share of jobs in second wage decile, there was a proportionately smaller increase in these jobs share of hours worked. This illustrates a major driver behind the increase in earnings inequality described previously – not only has there been an increase in dispersion of working hours across the labour market, but more working hours have been lost among low-wage than among high-wage earners.

Table 2 provides further analysis of the drivers of earnings inequality in Scotland between 2002 and 2010. It shows changes in the inequality of earnings and of hours worked within each of nine broad occupational groups.

[2] Occupation wage in 2002 is taken from the Annual Survey of Hours and Earnings (ASHE). 2002 data is used because the 2001 ASHE bases its estimates on the previous SOC90 classification. The analysis only covers the period to 2010 because in 2011 there was a further change to the 2-digit SOC.

- Hourly wage inequality increased in each of the four highest-wage occupations between 2002 and 2010 (largely driven by an increase in upper-tail inequality). There was static or declining wage inequality in the other occupational groups.
- There was an increase in the dispersion of working hours in all occupations, measured by the ratio of the 90th percentile of weekly hours to the 10th percentile). This increase in dispersion of working hours was higher among the five lowest paying occupations than it was among the four highest wage occupations.
- As a result of the combined change in inequality of hourly wage and hours worked, weekly earnings inequality increased in all occupations other than sales/ customer services and personal services.

The growth in the share of jobs and hours in the highest and lowest-wage (i.e. skill) occupations might be expected to lead to an increase in overall inequality and in inequality in both tails of the distribution due to the loss of "weight" in the centre of the distribution. In section 4 we saw some evidence for this among FT workers. Among all workers inequality increased more in the lower half of the distribution mainly as a result of the increase in part-time working. Thus although there is some evidence of labour-market polarisation, its effect on inequality measures may be confounded with the effects of hours changes.

Furthermore, if it is the relatively less skilled who are displaced from declining middle-skill jobs then the average skill level of those who remain in these jobs will rise. If this was the case then there would be a rise in the average level of human capital in middle-skill relative to lower skill occupations, and this may help to explain the lack of any reduction in lower-tail wage inequality. Skill supply may also be influenced by immigration – Gordon and Kaplanis (2012) for example argue that increased immigration to London contributed to a reduction in wages in lower-paid occupations, and this in turn helps explain the expansion in demand for such jobs.

Another source of increased inequality has been that *within* industries. One possible explanation is differences in firm profitability and the increasing concentration of the most skilled (high-wage) workers in the most profitable firms. Various studies associate high-skill with computer-use (see e.g. Katz and Krueger, 1998). These firms are able to compete at an international level: those which cannot have smaller markets and must maintain downward pressure on wages to continue to trade. Such processes are potential sources of increased wage inequality *within* industries. Scotland has also experienced a growth in income inequality that is focussed within, rather than between industries. Between 1975 and 2001, based on Scottish data from the New Earnings Survey and utilising the mean log deviation measure[3], inequality of hourly earnings *between* industry sectors increased by 28.8 per cent, while inequality *within* sectors increased by 57.4 per cent.

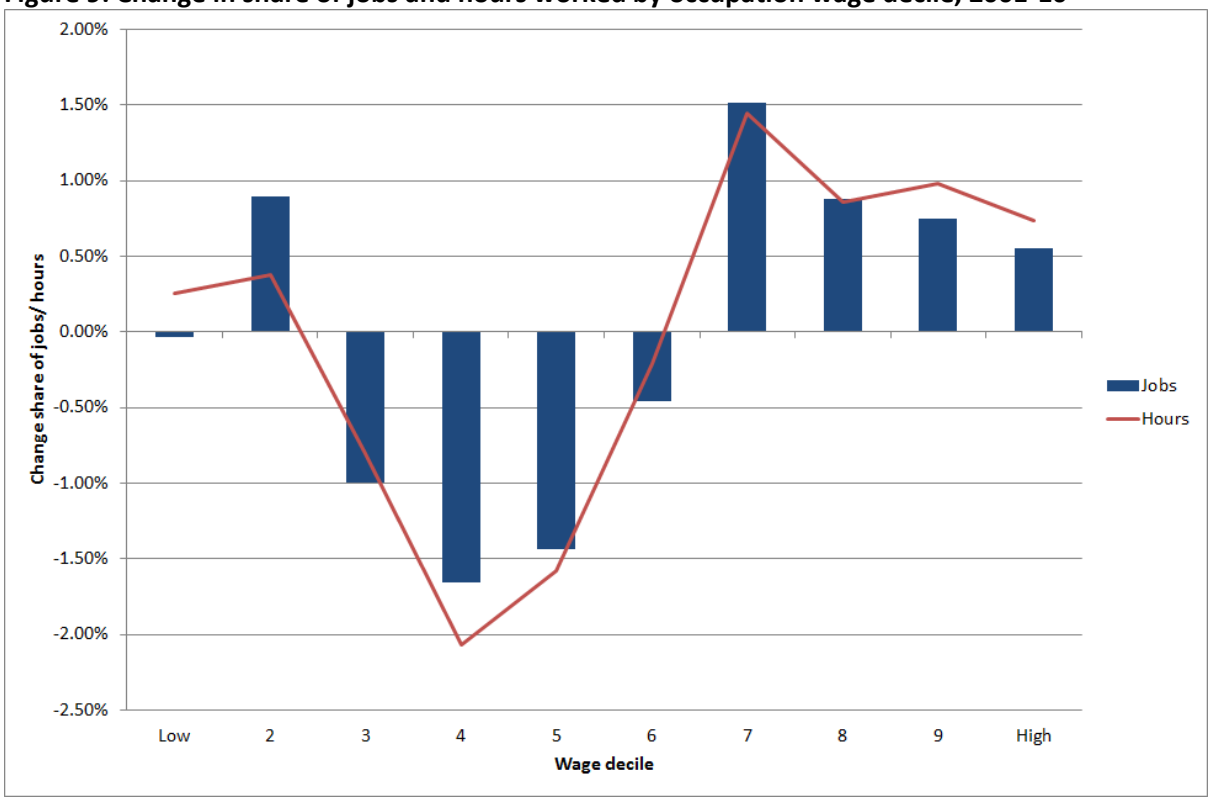
The discussion in this section thus far has focussed on drivers of earnings inequality right across the earnings distribution, but section 4 also highlighted the dramatic rise in the relative earnings of the top 1 to 2% of earners. Explanations for this rise in top-pay include:

[3] The log mean deviation is a measure of inequality is *decomposable.* That is, it can be calculated both for an entire population and for sub-groups within that population. The measures have the property that the inequality *between* subgroups added to the inequality *within* sub-groups equals the measure of overall population inequality.

- That technological progress has made managerial skills more general and less firm specific, increasing competition for the best executives from segregated within firm markets to a single economy wide market (Picketty and Saez, 2006).
- Linked to this, that the rise in extreme inequality is focussed in the banking and financial sectors (Stewart, 2011), and that this sector is particularly prone to 'superstar effects', where gains are disproportionately skewed to those traders who can leverage their ability across a globalised market (Bell and van Reenan, 2010).
- That removal of impediments to free markets - such as unionisation, labour market regulation, or social norms regarding pay structures – has shifted the 'balance of power between workers and their employers' (Schmitt, 2009) and enabled the increase in top pay.
- That the surge in top compensation (particularly in the United States) is due to an increased ability of executives to set their own pay and extract rents at the expense of shareholders.
- Growing use of performance related pay;
- A behavioural response to reductions in marginal tax rates (OECD, 2011).

This section has suggested that technological change, globalisation, and working patterns have had a significant effect on inequality trends in Scotland. In the next section we consider what scope there might be for an independent Scotland to mitigate some of these trends.

Figure 9: Change in share of jobs and hours worked by occupation wage decile, 2001-10



Notes: Figure shows change in the share of jobs and hours worked (excluding overtime) between 2001-10 in each wage decile. Only 'main jobs' and the hours associated with these are included, i.e. 'second jobs' are not included. Wages of 81 3-digit SOC2000 occupations were ranked according to their median gross hourly wage at UK level in 2002. Sources: Labour Force Survey and Annual Survey of Hours and Earnings

Table 2: Changes in inequality of earnings and hours worked (all workers), Scotland 2002-2010

	Median wage, 2002	Change median weekly hours worked	90/10 ratio of hourly wage inequality			90/10 ratio of hours worked			90/10 ratio of weekly earnings inequality		
			2002	2010	Change	2002	2010	Change	2002	2010	Change
Managers and senior officials	£14.07	0.0	4.16	4.51	0.35	1.22	1.28	0.06	4.24	4.54	0.30
Professional occupations	£15.02	0.0	2.41	2.55	0.14	1.78	1.91	0.14	2.91	3.21	0.31
Associate professional and technical	£11.69	0.0	2.31	2.41	0.10	2.26	2.41	0.15	3.53	4.10	0.57
Administrative and secretarial	£7.32	0.0	2.13	2.15	0.02	2.00	2.48	0.48	3.25	4.11	0.86
Skilled trades occupations	£8.35	-0.5	2.36	2.46	0.10	1.44	1.52	0.08	2.91	3.23	0.32
Personal service occupations	£6.36	1.4	2.12	2.03	-0.09	2.79	3.04	0.25	4.52	4.20	-0.32
Sales and customer service occupations	£5.22	-2.1	2.11	1.77	-0.34	3.08	3.29	0.21	5.29	5.06	-0.23
Process, plant and machine occupations	£7.03	-0.5	2.32	2.17	-0.15	1.58	1.82	0.23	2.74	2.95	0.21
Elementary occupations	£5.26	-4.2	2.04	1.86	-0.18	3.76	4.41	0.65	6.13	6.58	0.45

Source: ASHE

4. Policy implications for an independent Scotland

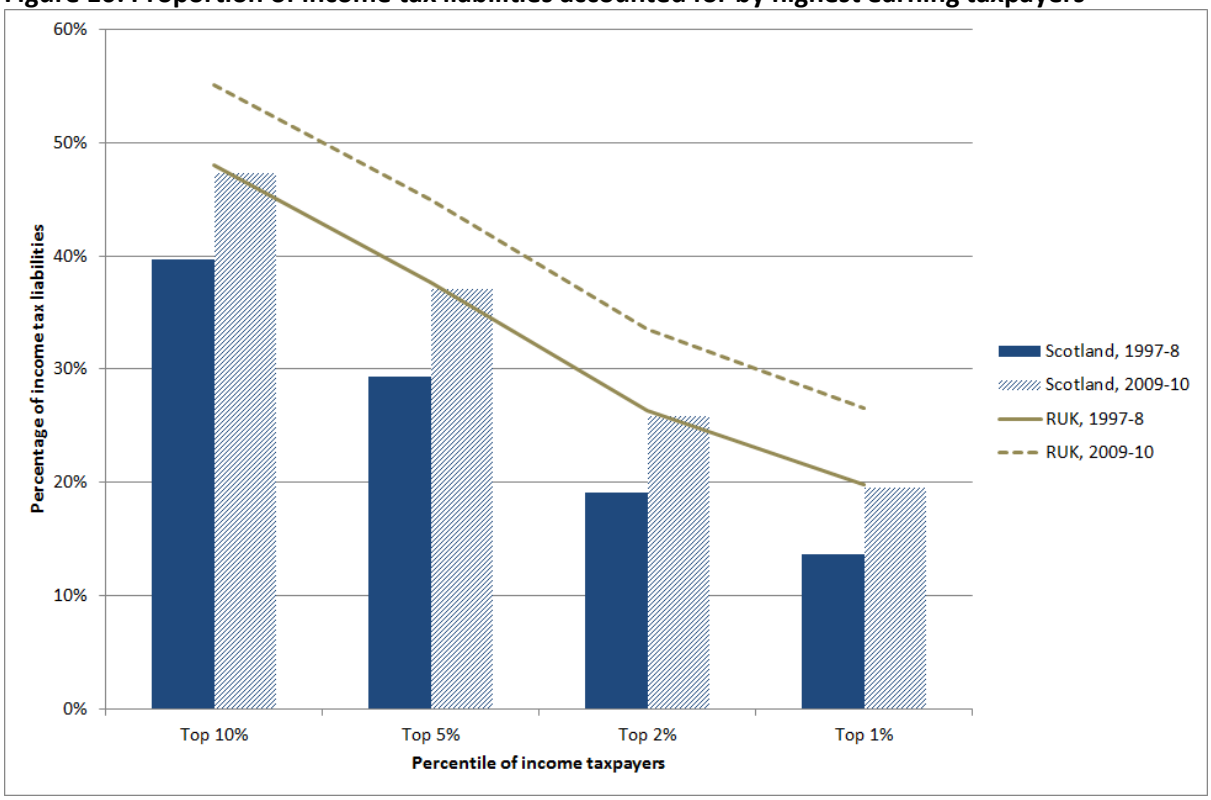
An independent Scotland would be able to use a wider set of fiscal levers – taxes and benefits – to address inequality concerns. But would the Scottish electorate support greater progressivity? The 2011 British Social Attitudes Survey provides limited evidence that it might. Scots are more likely than English voters to think the gap between high and low incomes is too large (78% v. 74%); are more likely to support government efforts at redistribution (43% v. 34%); are more likely to say that social benefits are not high enough (6.2% v. 3.6%); and more likely to say that unemployment benefits are too low and cause hardship (22% v. 18%).

The Scottish Government already has some powers which it could use to influence inequality. These are mainly on the expenditure side, with virtually all spending on health, education and social care devolved to the Scottish Parliament. By making public goods available at no cost, the Scottish Government reinforces the redistributive effects of welfare benefits provided by DWP. Spending per head on public services is higher in Scotland, which implies a larger redistributive effect in Scotland provided public goods are delivered with equal efficiency in Scotland and rUK. Across OECD countries spending on public social services reduces income inequality by one fifth on average (OECD 2011). Arguably, the Scottish Government already possesses this 'lever' (within the envelope of their total block grant allocation), but has hitherto prioritised spending on universal benefits rather than more redistributive spending policies – although whether universal or means tested benefits are most effective at reducing inequality in the long-run can be debated (Bell, 2010).

With the exception of council tax however, the Parliament has no policy levers to address inequality through taxation. The Scotland Act 2012, which will see the Scottish Parliament take responsibility for setting a 'Scottish Rate of Income Tax' (SRIT), will not actually enable the Parliament to adopt a more progressive tax system. According to the provisions of the Scotland Act, the SRIT must be set at the same rate for each (UK government-determined) income tax band – in effect, redistribution will thus be 'reserved' to the Westminster parliament.

How might an independent Scotland use fiscal powers to address income inequality? One of the implications of the rise in the share of top-earners in total income is that an increasing proportion of income tax liabilities are owed by an increasingly small proportion of top earners. The share of Scottish income tax liabilities of the highest earning 10% of taxpayers increased from 40% to 47% between 1997 and 2009, while the share of liabilities for the highest earning 1% of taxpayers increased from 14% to 20% (Figure 10).

Figure 10: Proportion of income tax liabilities accounted for by highest earning taxpayers



Source: SPI

The rise in the share of top-income earners in total income arguably provides scope for an independent Scotland to adopt a more progressive form of income taxation. Nonetheless, in considering reform to tax policy, an independent Scotland would need to bear in mind the relatively high propensity of top-earners to shift their income from one jurisdiction to another, or to record it in other ways. Evidence from the Mirrlees Review suggests that any further increases in income taxation would be unlikely to raise any additional tax revenues (Mirlees et al. 2011).

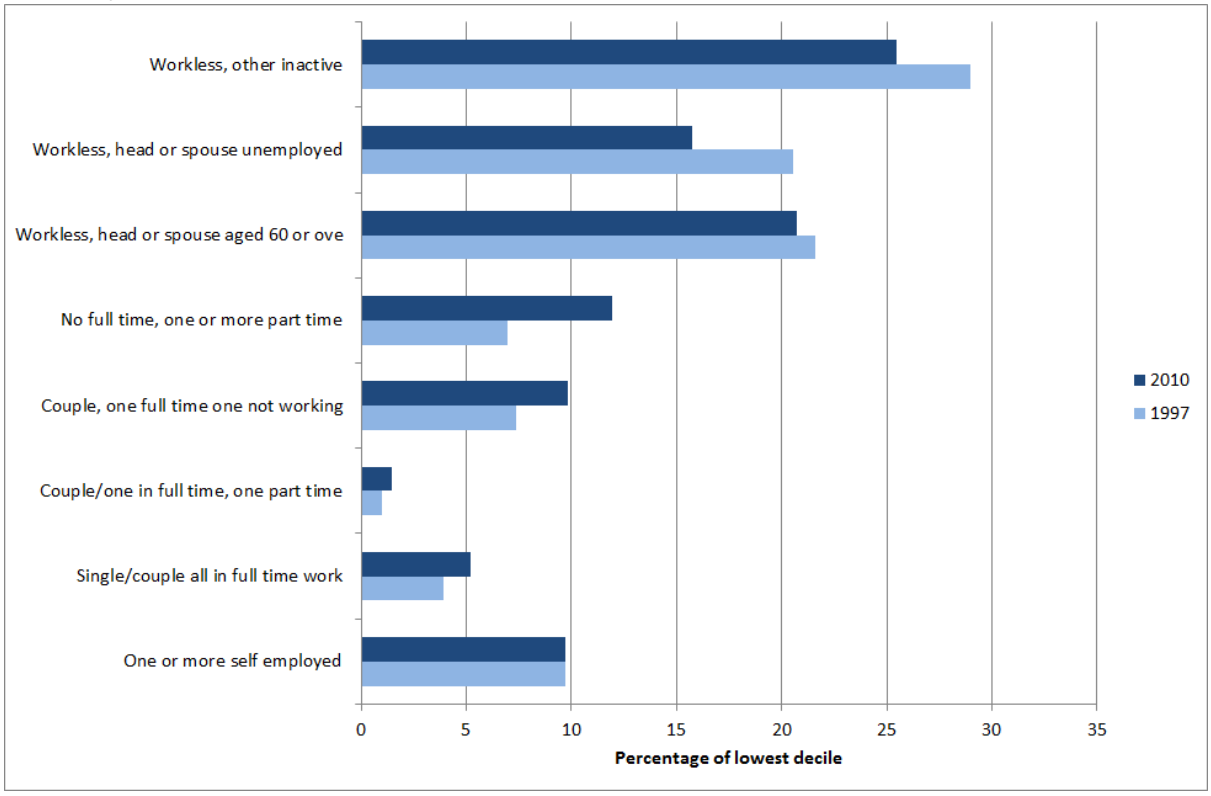
An independent Scotland would also be able to make changes to the welfare system although, given the challenges around the long-run fiscal position, reform may need to focus on the level of redistribution, rather than an increase in the overall welfare budget. Welfare reform to tackle inequality will need to balance the complex set of relationships between safety nets and incentives, especially given the wide range of individuals who are found in the bottom 10% of the income distribution. Figure 11 shows that while 20% of Scotland's poorest 10% are pensioners and 40% live in workless households, since 1997 there has also been a significant rise in the proportion of the poorest 10% who live in households where at least one person is in work (up from 19% to 29%). This illustrates the difficulty in getting right the balance between labour-market reform to increase employment, and ensuring that work can offer a route out of poverty.

An independent Scotland would have the advantage of being able to re-think its broad approach to employment taxation and benefits for those on low incomes. The recent Mirlees Review highlighted a large number of ways in which the UK's current system is overly complicated and creates disincentives to work, with bizarre rate structures and an overlapping array of means-tested benefits (Mirlees et al. 2011). It highlighted a range of ways in which the UK's current system could be reformed, including the integration of income tax with national insurance, introducing a more

coherent schedule of personal allowances, simplifying the complex array of benefits and tax credits, and strengthening work incentives for those with school-age children and those over 55.

In addition to fiscal levers, an independent Scotland would have greater freedom to influence inequality through pre-distribution. Such policy levers could include introducing a higher minimum wage (or different levels of minimum wage in different sectors), investing more in early years support and education, and improving opportunities around vocational learning, apprenticeships, and skills development in work. The case for these types of policies has been made by those who support the notion of the 'Common Weal', (a distinctively Scottish version of the forms of social organisation that have developed in Scandinavia), and the UK Government's Social Mobility and Child Poverty Commission (2013) made similar recommendations in its most recent report.

Figure 11: Economic characteristics of families in the bottom 10% of the income distribution, Scotland, 1997-2010



Source: Households Below Average Income

5. Conclusions

The rapid rise in inequality in the UK from the late 1970s through to the early 1990s has been superseded since the mid-90s by a more complex picture of income change across the distribution. Earnings inequality has risen relatively slowly, driven by greater dispersion in the number of hours worked within all occupations, but also by changes across occupations, with jobs in lower paying occupations seeing a declining share in hours worked.

There is at least some evidence that the rise in earnings inequality is due to continued polarisation of the UK labour market during the 2000s. There has been an increase in the share of jobs in the top

third of the income distribution, and these jobs have tended to see their share of hours grow faster than their share of jobs. Jobs in the middle of the income distribution have seen a declining share of total jobs and hours. And whilst there has been some increase in the number of low-skill jobs, the increase in labour supply from increased employment and displaced middle-skill workers has resulted in a reduction in median hours worked in these jobs. This contributes to the overall rise of in-work inequality during the 2000s.

The increase in the level of redistribution to working families that took place during the 1990s and 2000s however has meant that the (relatively small) increase in earnings inequality has not filtered through to an increase in net income inequality across most of the income distribution. In fact, between the 10th and 90th percentiles there is even evidence that inequality has fallen. At the very extremes of the distribution however inequality has increased. At the top end, this is driven by a continued expansion in the share of earnings of the richest 1-2%, linked to the growth in the financial sector, bonus pay, and a globalising market for 'superstar' CEOs and financial managers.

Inequality in Scotland is slightly less than in rUK as a whole, but only because of the very high levels of inequality in London. Excluding London, the level and trend of inequality in Scotland has been virtually identical to that in rUK. Thus overall inequality in Scotland is high in an international context, but the gap between the UK and most other OECD countries has tended to narrow slightly since the 1990s, given faster inequality growth elsewhere.

A number of commentators argue that the outlook for inequality is bleak. The Coalition Government's policy of welfare reform and benefit cuts is likely to reverse the trend of static (or declining net income inequality (Portes, 2011; Dickens, 2011; Cribb et al. 2012). And ongoing technological change is likely to further increase the skill premium, a trend which increased educational participation does not yet seem to have reversed (OECD, 2010). Beudry et al. (2013) argue that, in the US, demand for high skill workers began to decline around 2000; this has resulted in high-skill workers moving down the occupational ladder, displacing lower-skilled workers further down the job-quality spectrum and in some cases out of the labour market altogether. As technology becomes more sophisticated, its ability to substitute for what were hitherto regarded as high-skilled tasks (eg legal services, medical diagnoses) is likely to increase.

An independent Scotland would gain access to a wider range of fiscal levers with which it could tackle inequality, notably around taxation and welfare spending. There is certainly scope for significant reform of the UK's employment tax and benefits policy (Mirlees et al., 2011). These reforms could potentially include a restructuring of income tax rates and reliefs, and simplification of the benefits system to improve work incentives, and some such reforms could be structured to have redistributive effects. There is some evidence that the Scottish electorate would be more supportive of such reform compared to voters in other parts of the UK.

However, given that many of the drivers of inequality are linked to global trends in technology, trade, and family formation practices, there are likely to be limits to the extent that a small open economy can mitigate them. Scottish independence would provide opportunities, but it would also come with constraints.

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