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Inequality and the Knowledge Economy: Running to Stand Still?

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Central to the Blair government's economic and social policies has been the promotion of a more 'knowledge-based economy'. However, some commentators have suggested that the knowledge economy stretches income distributions and polarises skilled and unskilled workers. Drawing on empirical data about the UK case to explore such claims, this paper concludes that there is a significant positive correlation between the extent to which a region's economy has become 'knowledge based' and its level of income inequality. It argues this finding has important policy relevant implications.

The UK: towards a knowledge economy?

The claim that the UK's industrial economy has given way to a knowledge-based economy is now becoming commonplace within political rhetoric. Much of New Labour's economic strategy was laid down in its first term in office in a White Paper titled *Our competitive future: building the knowledge driven economy* (DTI, 1998) and Tony Blair (1998: 5) argued in its foreword that 'Our success depends on how well we exploit our most valuable assets: our knowledge, skills, and creativity . . . for they are at the heart of a modern, knowledge driven economy'. More recently, a cross-departmental review of economic competitiveness concluded 'The comparative advantage of the industrialised world lies in more knowledge-based goods and services' (HM Treasury, 2004: 2) and, on this broad scale, the UK – along with its EU partners – committed itself as part of the Lisbon 2010 agenda to making Europe 'the most competitive and dynamic knowledge-based economy in the world' (European Council, 2000). Indeed, the notion is in fact a central frame of reference in New Labour's wider thinking, Giddens (2000: 163) arguing that 'Third Way politics . . . is concerned with restructuring social democratic doctrines to respond to the twin revolutions of globalization and the knowledge economy'.

A cursory look at some of the facts about recent economic change in the UK perhaps shows why the Blair governments have placed such an emphasis on the 'knowledge economy'. For instance, the number of people employed in the manufacturing sector has declined considerably over the past 25 years – more than halved as a proportion of total employment in fact – while the proportion employed in the financial and business services sector has shown considerable growth, almost doubling in the same period (National Statistics, 2004; see Figure 1). In addition, in terms of the 'value added' to the UK economy as a whole, while manufacturing contributed over 10 percentage points of GDP more than financial and business services in 1980, by 2002 the reverse was true (OECD, 2004; see Figure 1). In terms of the level and spread of qualifications within the

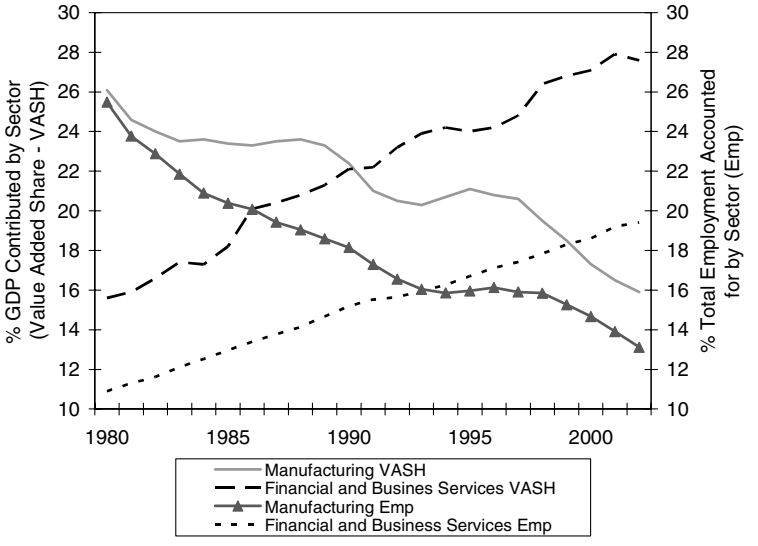

Figure 1. The UK's changing economic mix
Sources: National Statistics – *Labour Market Statistics First Release Historical Supplement*; OECD STAN database.

labour force there has been a significant shift too: in the last 15 years the proportion of people educated to degree level or above has more than doubled (OECD, 2003). We might also add to this mix what appears at times to be an increasingly rapid pace of technological change: certainly this is true of the number of high-tech patents filed each year, which more than quadrupled between 1989 and 2001, from 9.2 to 37.16 per million people (Eurostat, 2004).

Inequality and the knowledge economy: theoretical claims

Significantly, there are numerous suggestions within the existing research that this shift has major social consequences. It is often claimed that the rising income inequality witnessed in the UK and elsewhere since the late 1970s is in part attributable to technological changes that have placed a premium on knowledge-based workers; indeed, Harris (2001: 30) suggests that the so-called 'skill biased technological change' thesis is the 'standard explanation' for rising wage differences. While such claims often rest on abstract econometric modelling (e.g. Aghion and Howitt, 2002; cf. Powell and Snellman, 2004), empirically rooted research has also found that, since the 1980s, the wage differential between skilled and unskilled workers has increased (Coyle and Quah, 2002; Machin, 1996; Machin and Van Reenen, 1998). Writing from a broader theoretical perspective, Florida (2002), who has forcefully argued that creative knowledge-based workers are central to improved economic performance, warns that in the USA there is a growing economic polarisation between the 'creative class' and a marginalised periphery. On a similar note, Castells (2000: 12) has suggested that technologically driven economic change has produced a sharp divide between low-skilled 'generic labour' and highly

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skilled 'programmable labour' and claims that 'because of this structural divide [and] . . . in the absence of a determined public policy aimed at correcting structural trends, we have witnessed in the last 20 years a dramatic surge of inequality, social polarization, and social exclusion . . . [particularly] in the USA and in the UK'.

If correct, such claims pose a difficult question for centre-left governments – such as Blair's – looking to tackle inequality, while stimulating the growth of a more knowledge-based economy. Indeed, Oakley (2004: 73) suggests we should be concerned about 'the lack of political acknowledgement that, for a time at least, a more knowledge-based economic development strategy will exacerbate social polarization and inequality'. In short, there seems to be a *prima facie* case for undertaking a more detailed empirical analysis of the evidence about the links between inequality and the knowledge economy, particularly given the central role it plays in New Labour rhetoric.

Inequality and the knowledge economy: concepts and measures

Unfortunately, while the notion of a knowledge economy is prominent in political debate, there is little agreement in the academic literature over its definition. Neef (1999) emphasises the heightened significance of the 'weightless economy' – the shift from the production of goods to intangibles – a view echoed by Leadbitter (1998) and Quah (1999). Mokyr (2004) locates the knowledge economy alongside the growth of what he dubs 'useful knowledge' and, more specifically, the development of institutions that generate theoretical knowledge and seek to apply such knowledge in commercial settings. Others (e.g. Lever, 2002) see the 'knowledge economy' in even narrower terms, being simply the high-technology elements of the economy – albeit elements with high growth rates and a special role to play in promoting economic competitiveness. Though located within the same broad rhetorical sweep, each suggests a subtly different range of indicators for capturing the essence of the knowledge economy (Neef, 1999; Lever, 2002; Benner, 2003).

Given this, the investigation here utilises measures under three broad headings that build on these distinctions:

1. *those relating to the weightless economy*: the proportion of the workforce employed in the financial and business sector and the value added share produced by this sector (based on the SIC-92 – Standard Industrial Classification 1992 – definitions of these categories).
2. *those relating to knowledge development*: the proportion of those broadly of working age (16–74) with a degree-level qualification or above and the amount spent per capita on research and development activity in (a) higher education institutions and (b) private companies.
3. *those relating to technological intensity*: the number of scientists and engineers as a proportion of the workforce; the proportion of the workforce employed (or self-employed) in the IT sector; and, the number of high-tech patents per 1,000,000 of the population.

What is true of pinpointing suitable measures of the knowledge economy is also true, albeit to a lesser degree, of measures of inequality (Brewer *et al*., 2004). Here, four relatively standard measures are deployed: income ratios at the 90:10, 80:20 and 90:50

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percentiles and the gini index. In each instance, the measures refer to equivalised total household income after housing costs.[1]

In contrast to earlier studies of skill-biased technological change – which examined the returns to qualifications and specific knowledge for workers with varying skill levels – this study will follow the approach adopted by Florida (2002) in his study of the USA's 'creative class' by comparing different regions/countries of the UK. Each of the above measures are, therefore, computed on a regional, rather than national, basis,[2] with the core aim being to ascertain whether or not variations in knowledge intensity of the UK's regional economies are matched by variations in the income distribution patterns in its regional economies.

Inequality and the knowledge economy: exploring the evidence

While discussions of income distribution tend to treat the UK as a single analytic unit, a region-by-region analysis of income data highlights some marked differences (see Appendix for data tables and sources). So, for instance, while the 90:10 income percentile ratio for the UK as a whole is 4.66, this national figure masks variations at a regional level that range from 3.87 for the North East to 6.26 for London. In comparative terms, this means that the North East's income distribution is much like that for the UK as a whole pre-1980, while London's is more polarized than in the present-day USA. Unsurprisingly, perhaps, all four measures of income distribution highlight London as the region with the most uneven spread of incomes. The North East and Northern Ireland have the flattest income distribution patterns.

A similar – if not more pronounced – picture exists with regard to the knowledge economy (see Appendix A2). In terms of the emergence of the 'weightless economy', while the long-term trend in the UK as a whole has been a shift in balance from an industrial economy towards a service one, this masks considerable regional variations. While the financial and business service sector is more than twice the size of the manufacturing sector in the South East, and five times bigger in London, in other areas – such as the East Midlands, North East and Yorkshire and the Humber – it is the manufacturing sector that provides the bigger source of employment. The knowledge development indicators show similarly stark differences: for instance, in London 30.99 per cent of the adult population are qualified to degree level or above, more than double the 14.97 per cent in the North East, and research and development spending by businesses varies from a high of £537.97 per capita in the East to just £46.60 per capita in Wales. Finally, in terms of the science and technology measures, the proportion of the workforce employed in these fields ranges from 25.57 per cent in London to 15.45 per cent in Northern Ireland, while high-tech patents per 1,000,000 inhabitants ranges from 98.65 in the East to a mere 6.25 in the North East.

As Table 1 (see Figure 2 also) shows, these differences between the regions in terms of the 'weightless' components of their economies and in the patterns of income distribution within the regions are heavily correlated. For each measure of income distribution and irrespective of whether we examine the measures relating to the proportion of the workforce employed in a sector or the value it adds to a region's GDP the picture is clear: the financial and business services sector measures show an extremely strong positive correlation with the inequality measures. By way of contrast, as Table 2 shows,

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Table 1 Weightless economy measures

	Pearson correlations	
	Financial and business services	
	% workforce	Value added
90:10	0.969**	0.956**
80:20	0.962**	0.949**
90:50	0.983**	0.967**
Gini	0.960**	0.933**

Note: *$p < 0.05$, **$p < 0.01$.

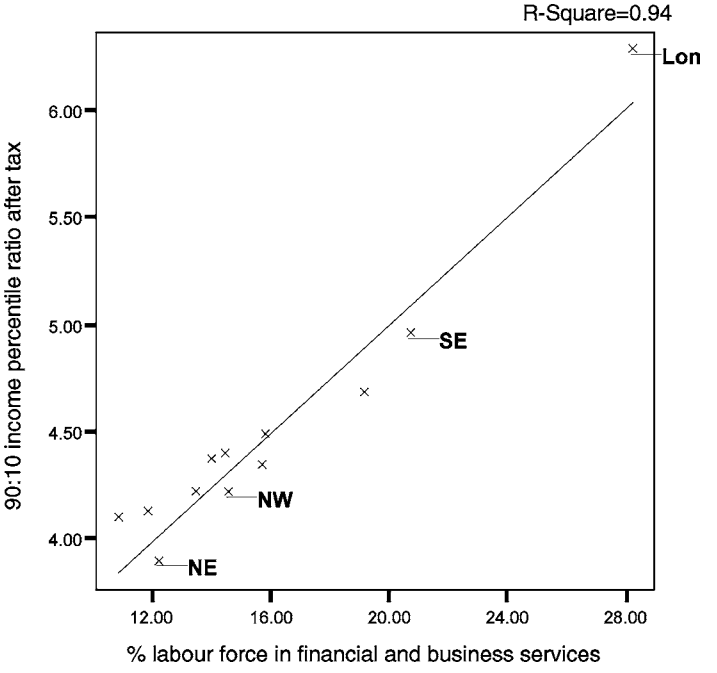

Figure 2. Inequality and knowledge economy (UK Regions, 2001/2)
Sources: Computed from Family Resources Survey 2002; 2001 Census Key Figures.

equivalent measures for the manufacturing sector show a strong negative correlation with the inequality measures.

Table 3 presents the 'knowledge development' indicators in the same fashion and again shows very strong positive correlations between the inequality indicators and proportion of adults educated to degree level or above and the higher education research and development spending per capita. There is, however, no correlation between inequality and the level of business R&D spending. Finally, Table 4 presents the 'technological intensity' indicators. Once more there are strong correlations between the inequality measures and the proportion of workers employed in science and technology

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Table 2 'Weighted' economy measures

	Pearson correlations	
	Manufacturing	
	% workforce	Value added
90:10	−0.767**	−0.840**
80:20	−0.698*	−0.787**
90:50	−0.782**	−0.873**
Gini	−0.681*	−0.808**

Note: *$p < 0.05$, **$p < 0.01$.

Table 3 Knowledge development measures

	Pearson correlations		
	Proportion of adult population with degree or above	R&D spending per capita	
		Higher education	Business
90:10	0.969**	0.820**	0.182
80:20	0.945**	0.842**	0.217
90:50	0.923**	0.814**	0.275
Gini	0.889**	0.816**	0.276

Note: *$p < 0.05$, **$p < 0.01$.

Table 4 Technological intensity measures

	Pearson correlations		
		% Labour force employed in	
	High-tech patents per 1,000,000 inhabitants	Science and technology	IT sector
90:10	0.473	0.918**	0.857**
80:20	0.462	0.888**	0.873**
90:50	0.585*	0.946**	0.898**
Gini	0.506	0.884**	0.876**

Note: *$p < 0.05$, **$p < 0.01$.

or in the IT sector. Again, though, one measure does not correlate with inequality: the number of high-tech patents per 1,000,000 inhabitants.

Discussion

The data presented here give us good reason for supposing that the shift towards a more knowledge-based economy is, in the context of existing tax and benefit arrangements, likely to contribute to widening income inequality in the UK. Regions with a more

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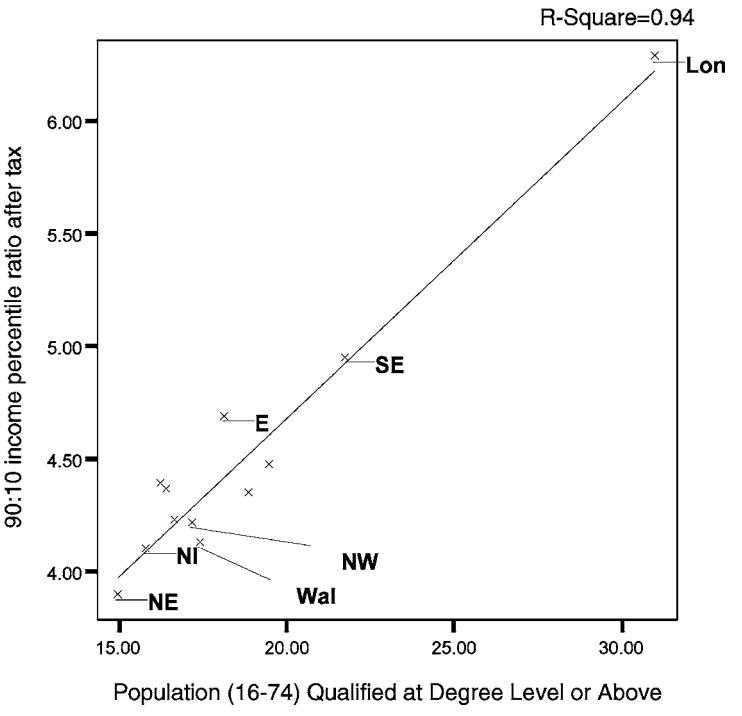

Figure 3. Inequality and knowledge economy (UK Regions, 2001/2)
Sources: Computed from Family Resources Survey 2002; 2001 Census Key Figures.

service-based economy have higher levels of income inequality than those regions with a more manufacturing-based economy. Likewise, regions with higher levels of highly qualified workers tend to have more unequal patterns of income distribution. And, on top of this, those regions that invest more in science-based R&D and where science and technology-based employment is more prominent also show higher levels of inequality. In short, those regions that have led the way in recent shifts towards a knowledge-based economy are also likely to be leading the way in terms of widening income inequalities.

The strength of some of the correlations presented here needs to be emphasised: within each of the three different categories of knowledge economy measures we find at least one of the indicators correlates with two or more of the four inequality measures at above ±0.900**. Of the 32 pairs of knowledge economy related correlations presented in the tables above, 24 score ±0.800** or higher, suggesting strong support for the claim that the shift towards a knowledge economy is associated with higher levels of income inequality. What, though, of the non-correlating indicators – those for business R&D spending and high-tech patents – can they be explained in a manner consistent with this thesis?

Closer examination of the data reveals that one of the main reasons business R&D spending correlates so poorly with inequality is because of the high levels of investment in some of the industrial heartlands, particularly the North West and East Midlands, and the relatively modest level of investment in the region that is most clearly post-industrial

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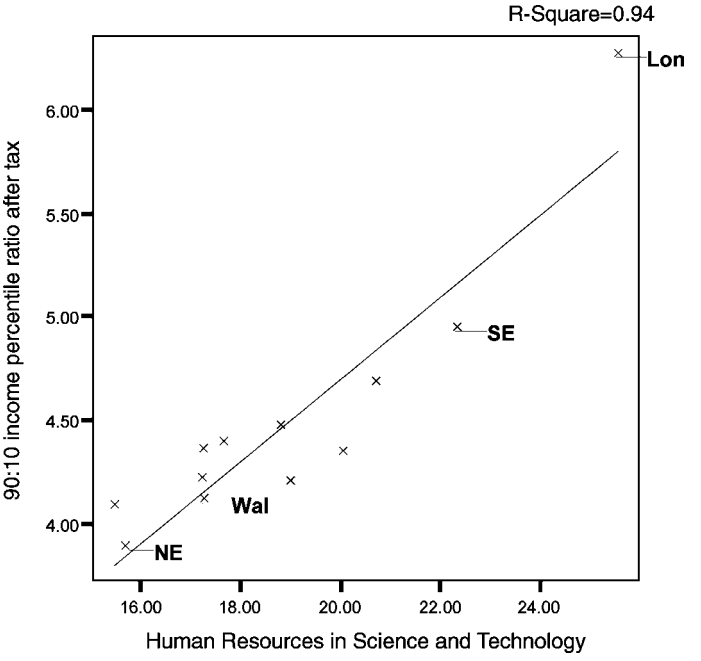

Figure 4. Inequality and knowledge economy (UK Regions, 2001/2)
Sources: Computed from Family Resources Survey 2002; Eurostat.

(i.e. London). How far business investment in R&D is a measure of the shift towards a post-industrial economy is, therefore, a moot point. Indeed, two interesting points are apparent. Firstly, regional variations in the focus of this investment can be ascertained. So, for instance, taking the two regions with highest business R&D spend, where employment in financial and business services is greater than that in manufacturing (the East and South East) and vice-versa (the East Midlands and North West), detailed breakdowns of R&D spending data show that the latter devote a smaller proportion of their investment to the service than the manufacturing sector (see Figure 5), so it may be that our indicator is simply too crude – it does not distinguish different foci for investment. Secondly, in all of these regions the manufacturing sector is easily the largest recipient of investment, so more simply still it may be that business R&D investment is less about the knowledge economy than about shoring up the manufacturing industries that remain in, or have their research arms based in the UK.

The picture with regard to high-tech patents is a little more complicated. Closer analysis of the data suggests there is some patterning in existence, but linear methods cannot capture this well, partly because the variations between regions are so wide and partly because of some extreme values in the data. It is also worth noting that the actual rates fluctuate quite widely for regions over time, though the rank orderings are fairly stable. This suggests that a non-parametric correlation may offer a more accurate picture: using Spearman's rho rank correlation to capture the association between high-tech patent registrations and income inequality does show a stronger degree of correlation for these

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Table 5 High-tech patents

Spearman's rho rank correlation	
	High-tech patents per 1,000,000 inhabitants
90:10	0.804**
80:20	0.692*
90:50	0.832**
Gini	0.755**

Note: $^{*}p < 0.05$ $^{**}p < 0.01$.

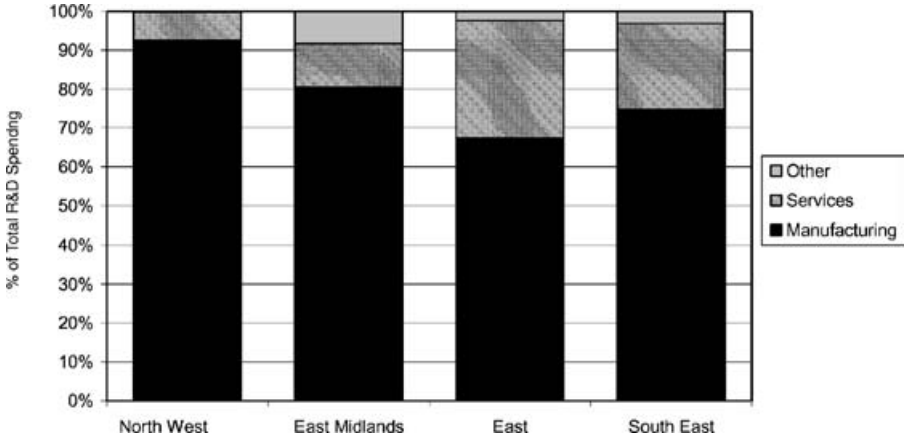

Figure 5. Business R & D spending by type
Source: National Statistics, Business Monitor MA14 2002.

measures, pushing two into the 0.800** or stronger category and bringing another close (see Table 5). Interestingly, it is the measures that capture differences between the highest earners and others that show the greatest degree of correlation here: this fits suggestions in the knowledge economy literature that high-tech patents bring extremely high rewards to a relatively small number of people – the owners of the intellectual property the patent seeks to protect and those who invest in turning patented ideas into marketable goods (see Powell and Snellman, 2004).

Equality and the knowledge economy – running to stand still?

In short, there is a strong correlation between most of the knowledge economy indicators and the measures of inequality, and, further, it is possible to reasonably explain the presence of some non-correlating indicators in a manner that is consistent with the general thesis that the more knowledge based a region's economy the higher the level of income inequality within in it. Before drawing any firm conclusions, however, a number

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of limitations need to be taken into account. To begin with, it should be acknowledged that some of the measures are undoubtedly crude. At the most fundamental level it might well be argued that they do not capture sufficiently clear differences between the 'knowledge' and the 'industrial' economy: well-qualified workers, R&D in businesses and patented technology are central to both. This, in part, is a consequence of the crudity, perhaps even speciousness, of the very notion of the knowledge economy as a successor to the industrial economy (Garnham, 2000). In addition, the figures provide no more than a snapshot: a time series analysis would, of course, provide us with a more robust picture, though, unfortunately, the continual redrawing of England's regional boundaries acts as a major barrier to such an approach, as does the reclassification of labour force data. Less serious in terms of the overall analysis, but still worth noting, is the fact that there are some accepted problems with the accuracy of the regional grossing measures deployed in one of the key surveys used here (the FRS – see DWP, 2003). In short, refinement of the measures and a widening of the time scale would undoubtedly add to our understanding.

However, Dorling and Thomas' (2004) analysis of the 2001 census data – arguably the most comprehensive analysis to date – provides much support for the general picture of change suggested here. In particular, they highlighted the major shifts since the 1991 census as being, in employment terms, the growth of banking and finance (mainly in London and the south), the decline in skilled trades and the rise in unskilled jobs and, in terms of the spread of skills, the movement of qualified workers to the south of the country – especially London – with a particularly rapid rise in the proportion of graduates employed in the capital. Indeed, of the latter, they commented that:

> What is most remarkable of all is that despite the huge recent increase in graduates, upon graduation people continue to cluster within the capital in increasing concentrations. Our education system serves the world city best and leaves millions behind in places damned for their population's supposed inadequacies. (ibid.: 81)

The overall conclusion they drew from their analysis of the Census data was that the past decade had seen an increasingly prominent *geographic* polarisation of the UK, with London and its surrounding regions displaying marked social and economic differences from the rest of the country:

> At the start of the 21st century, the human geography of the UK can be most simply summarised as a tale of one metropolis and its provincial hinterland . . . [but] this divide is no longer a regional division; it now marks the boundaries of two places which are ever more dissimilar to each other across that divide, but much more homogenous within themselves. (ibid.: 183)

This is significant for the question in hand for two key reasons. Firstly, the data presented here also suggest a picture of geographic polarisation, with the economies of London and its surrounding areas being more knowledge based than in the rest of the nation, while also producing higher levels of income inequality. Secondly, in the absence of robust time-series data here, the picture of dynamic change presented in Dorling and Thomas' work lends some support to the claim that these differences between the regions in terms of inequality and knowledge-based economies are part of a picture of ongoing

socio-economic change rather than being more deeply entrenched differences that are being carried forward from the industrial 'era'.

In short, despite limitations in the data presented here, there are good reasons for us to provisionally conclude that the knowledge economy fuels higher levels of inequality. Subscribing to such a view raises some important policy issues, not least the suggestion that, as the knowledge economy unfolds, governments looking to tackle income inequality will have to work harder than in the past to correct market generated income imbalances. Indeed, it could well be that those implementing relatively modest financial transfer programmes, while simultaneously trying to encourage further development of a knowledge-based economy – such as the Blair government – may simply find they are running to stand still in their efforts to tackle inequality because raw market-based incomes will continue to widen as the industrial economy recedes. This hypothesis would certainly fit with a recent IFS analysis of income inequality trends in the UK, which concluded that 'even the relatively large redistributive programme introduced by Labour since 1997 has only been sufficient to just about halt the growth in inequality, and certainly not to reduce it' (Brewer *et al*., 2004: 23).

Indeed, it may well be that egalitarian governments in economically advanced nations will face a difficult policy dilemma as the knowledge economy unfolds. Giddens (2000) argues that the economic challenges presented by globalisation and the knowledge economy require restructuring of both economic and social policies in order to emphasise investment in human capital and flexible labour markets and that 'the welfare state . . . needs to be reconstructed as a 'social investment state' (Giddens, 2000: 52). Reorienting the policy agenda in this manner, according to Giddens (1998: 100–1), does not undermine the centre-left's traditional egalitarian values because it has 'quite rightly shifted the emphasis towards the "redistribution of possibilities"' because 'the cultivation of human potential should as far as possible replace "after the event" redistribution'. But, if one of the main effects of the knowledge economy is to widen income inequalities, then this points to a potentially significant weakness in the Third Way approach, for, while a social investment approach may well help create a more knowledge-based economy and, in so doing, boost economic competitiveness, the cumulative effects of widening income inequality that result are likely to challenge attempts to create a more equal distribution of opportunities. As Giddens (2000: 53) himself notes, even if Third Way politics aims 'to maximize equality of opportunity . . . [it still] has to preserve a concern with limiting inequality of outcome too', because 'equality of opportunity can generate inequalities of wealth and income – that then hamper opportunities for subsequent generations'.

Significantly, Giddens' most recent 'Third Way' themed publication acknowledges that 'there remain doubts as to whether [New Labour's] existing policies are sufficiently far-reaching to have a major impact on long-term trends in economic inequality' (Diamond and Giddens, 2005: 101) and defends the record to date by suggesting that 'certain structural factors are difficult to counteract . . . [and] are arguably intensifying rather than weakening as the spread of the knowledge economy takes hold' (ibid.: 110). Yet, while another of the contributors to the same volume argues that 'if we are to develop a third way on income inequality it will have to be based in the recognition that the New Economy has brought about fundamental new realities that can't be ignored or reversed' (Atkinson, 2005: 53) and suggests that existing policies aimed at upskilling the workforce and attracting high-tech jobs to the economy need to supplemented by a consideration

of 'how tax policy can be used to lean into the wind of growing income inequality' (ibid: 67), Giddens remains adamant that increasing income taxes on high incomes is not 'the way forward' (Diamond and Giddens, 2005: 112).

However, we should not assume that the pattern of change witnessed in the UK is inevitable. As Castells and Himanen (2002: 3) have argued in a discussion of the welfare state and the new economy, 'the paths and outcomes of this transformation are extraordinarily diverse . . . there is no one model'. Differing welfare regimes (Esping-Andersen, 1990), varieties of capitalism (Hall and Soskice, 2001) or political structures (Hudson and Lowe, 2004) may all prove to have an impact on the nature of this change. Moreover, different combinations of the many elements that fall under the broad heading of the 'knowledge economy' might impact on income distributions too – it could be that an emphasis on the science and technology sector rather than the finance and business services sector, for instance, might bring a more equal income distribution without threatening economic growth. On this note, Castells and Himanen (2002) draw a contrast between two high-technology economies – the USA and Finland – that display markedly different patterns of inequality and social exclusion. Similarly, Benner (2003) argues that the Scandinavian welfare states have fared well because governments in the region – particularly in Finland and Denmark – made a conscious decision to re-orient their economies towards knowledge-based activities, but in a way that would support the core features of their existing social democratic welfare regime.

To advance the debate, then, comparative studies of inequality and the transition to the knowledge economy are urgently required in order to help us understand how far rising inequality is a structural feature of more knowledge-based economies; whether specific institutional structures, social policies or components of the knowledge economy lead to greater or lesser degrees of inequality; and, above all, how egalitarian governments that embrace the knowledge-based economy can avoid simply running to stand still in their efforts to tackle income inequality.

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Notes

1 See DWP (2003) for more detail on how equivalence scales are computed in the FRS. The figures presented here are for total equivalised household after housing costs, taxes and benefits (including tax credits) with the exception of earnings by children in families which have been excluded due to limitations in the data set. In addition, following the approach adopted by the Luxembourg Income Study

(see http://www.lisproject.org/keyfigures/methods.htm), extreme values have been removed: the data for each region has been bottom coded at 1% of equivalised mean income and top coded at 10 times the median non-equivalied income.

2 The term 'UK regions' is used a short hand here, but England, Scotland, Wales and Northern Ireland are, of course, nations rather than regions. The 'regions' referred to in the paper are the nine government regional offices of England plus Scotland, Wales and Northern Ireland. In order to provide reliable regional measures, in each case data was drawn from the largest available recent survey containing the required indicators broken down by UK region or country; details of the data sources are in the Appendix (Table A3). All figures relate to 2001 except the income data which are for 2002–3 in order to allow for the inclusion of Northern Ireland.

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Appendix: Raw data tables and sources

Table A1 Income distribution

Region	Income percentile ratios			Gini index
	90:10	80:20	90:50	
East	4.67	2.82	2.15	34.01
East Midlands	4.20	2.68	1.95	31.49
London	6.26	3.45	2.41	38.85
North East	3.87	2.54	1.98	30.08
Northern Ireland	4.08	2.48	1.92	30.39
North West	4.19	2.58	2.03	31.61
Scotland	4.46	2.69	2.09	32.57
South East	4.93	2.93	2.18	34.02
South West	4.33	2.54	2.06	30.90
Wales	4.10	2.54	1.96	29.69
West Midlands	4.37	2.66	2.02	32.41
Yorkshire and the Humber	4.34	2.65	2.07	32.49
UK	4.66	2.77	2.15	33.52

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Table A2 Knowledge economy indicators by regions

Region	Financial & business services		Manufacturing		R&D spending (£ per capita)		Aged 16–74 with degree or above %	IT workers %	Scientists and engineers %	High-tech patents (per 000,000 pop)
	VASH %	Employment %	VASH %	Employment %	Higher education	Business				
East	30.95	19.12	16.32	14.47	67.52	537.97	18.14	3.4	20.71	98.65
East Midlands	21.38	13.48	26.15	19.91	53.14	225.60	16.63	2.6	17.20	13.36
London	46.74	28.24	11.08	7.63	133.24	100.33	30.99	4.8	25.57	43.91
North East	20.59	12.20	24.04	16.99	56.50	47.35	14.97	1.9	15.69	6.25
Northern Ireland	17.29	10.81	20.26	14.18	43.02	88.41	15.80	1.3	15.45	8.52
North West	23.81	14.57	23.11	16.89	47.56	223.31	17.17	2.9	18.98	16.20
Scotland	22.47	15.81	18.87	13.23	100.89	101.29	19.47	2.4	18.79	18.53
South East	34.62	20.68	14.94	12.13	69.93	412.71	21.75	4.4	22.35	75.37
South West	26.32	15.69	19.44	13.95	35.89	206.67	18.84	2.8	20.05	51.61
Wales	19.64	11.78	24.56	17.34	53.11	46.60	17.39	1.6	17.25	11.54
West Midlands	23.69	14.43	24.91	20.80	39.03	124.81	16.19	2.6	17.68	12.36
Yorkshire & the Humber	21.98	14.00	22.32	17.35	63.62	59.81	16.38	2.3	17.24	15.63

Table A3 Data Sources

Variable(s)	Source
Sector of employment and proportion degree qualified	2001 Census Key Figures (CASWEB, 2004)
VASH of sector	OECD Structural Analysis Database (OECD, 2004)
Technological intensity measures and R&D spending	Eurostat (2004)
Household Income	2002–3 Family Resources Survey (DWP, 2003)

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