SKOPE

ISSUES PAPER 26

April 2011

# Implications of polarisation for UK policymakers

*Craig Holmes*
*SKOPE, University of Oxford*

**Summary**

*Central to the previous UK Government's 'high-skill vision' was the notion that technological progress uniformly drove up the demand for skilled labour. However, it had also begun to recognise the possibility that technological progress may lead to a growth in both good jobs and bad jobs, and a decline in middling jobs (see DWP and DIUS 2008, DBIS 2010). Often this is described as the polarisation hypothesis, the hourglass economy or the 'hollowing-out' of the labour market. It is still too early to say what view the coalition government will take, so it is timely to question how significant this hypothesis is for policies relating to skills and the labour market. This Issue Paper presents an overview of this literature and, in assessing its key ideas, draws upon new SKOPE research on labour market segmentation.*

## The hourglass economy

The impact of technology on the labour market has long been recognised. One theory is that technology is complementary to skilled labour and substitutable for unskilled labour, so that technical advances (causing a fall in the price of information and communication technology capital, for example) lead to an increase in demand for more educated or better trained workers and a decrease in demand for unskilled workers. This is called skill-biased technical change. Depending on the supply of skills in the market, this may lead to a growth in the relative employment rates of skilled labour, the relative wages of skilled labour, or both.

Autor, Levy and Murnane (2003) refined this idea and argued that technology was substitutable for routine tasks and potentially complementary to non-routine tasks. Routine tasks are those which could be written down as a series of instructions, such that a computercould be programmed to replicate them. Hence, technical progress decreases demand for labour mainly performing routine tasks, and may increase demand for non-routine occupations which are complementary. This is known as routinisation.

Goos and Manning (2007) found that routine occupations were mostly in the middle of the labour market (ranked by wages, skill or some alternative measure of quality), whilst non-routine occupations were either high-skilled managerial, professional or technical occupations, or low-skilled service or manual occupations, such as cleaning or shelf-stacking[1]. This implied that routinisation would lead to a growth in employment of jobs at the top and bottom of the distribution, and a decline in the middle, leading to the description of an hourglass economy. Low-skilled non-routine occupations may not be particularly complementary to technical progress, but displaced routine occupation workers may find themselves moving to these jobs. Thus, the growth in non-routine occupations would occur because of increases in demand (for the high-skilled jobs) and increases in supply (for the low-skilled jobs). In contrast, skill-biased technical change would predict a fall in demand for low-skilled jobs.

[1] In this literature, there is a difference between work that could be described as repetitive, such as shelf-stacking or cleaning, and work which is considered routine, such as semi-skilled process operatives. The key is that many repetitive tasks involve a degree of observation or interaction with an environment, which a computer cannot be programmed to replicate.

## Inclusion in policy discussions

Routinisation and the polarisation hypothesis clearly have implications for inequality and mobility in the labour market. Consequently, they also have implications for a number of government policies, particularly those related to skills, which have been seen as a way of increasing mobility and improving labour market outcomes for workers at the bottom end. They also have implications for economic growth in which, again, skills policy plays an important role.

In recent years, this has started to be acknowledged through discussion papers, research reports and consultation documents, although recognition of the polarisation hypothesis is generally used as background information. For instance, DBIS (2010), in support of the *Skills for Growth* White Paper, highlights the work of Goos and Manning (2007). When it comes to directing policy, however, the previous government proved unwilling to drop their allegiance to the skill-biased technical change view of the world. The above report, for example, does not acknowledge the potential impact of growing employment in low-skilled non-routine occupations when it discusses, 'the types of skills the UK will need to succeed in this new environment' (DBIS 2010: 14)[2].

In part, this is because the paper argues that evidence on polarisation is mixed. The analysis in the DBIS report looks at changes in absolute employment of different skill levels and shows similar changes within industries, leading to the conclusion that there has been, 'a more even change of employment share by skill level' (DBIS 2010: 13). This is misleading: middle-skilled jobs probably started with a greater absolute number of employees in the first place, so similar increases in absolute numbers implies a falling employment share of middle-skilled jobs. Moreover, it is not clear whether this analysis is looking at number of jobs which require such skill levels, or the employment of people with those qualifications. As firms' labour demands change, then potentially middle-skilled individuals are forced to take lower-skilled jobs. Suppose that the 'Distribution and hospitality' sector, which has seen an increase in employment numbers of low and middle-skilled workers (DBIS 2010: Figure 2.8), heavily uses low-skilled non-routine service jobs in its production mix. Rather than suggesting an increase in demand for middle-skilled workers, it could reflect a growth in low-skilled work coupled with underutilisation of middle-skilled workers.

On mobility, Nunn et al. (2007) observe that the decline of middling jobs may impede an individual's ability to move from low quality to high quality work. Implicit in this is the idea that individuals progress by small steps and that careers are established by one job allowing access to better jobs through the skills and experience developed there. Moreover, they note that 'as the period of increased absolute mobility driven by the changing occupational structure comes to an end, opportunities for mobility may be further constrained, relative to previous decades.' This conclusion is supported by some of SKOPE's recent research. For example, Holmes (2011) looks at the eventual destination of routine workers between 1981 and 2004. It finds that periods where more routine occupations were lost were associated with a greater likelihood of moving both upwards and downwards. In a later discussion paper on mobility, DWP and DIUS (2008) find 'no evidence that polarisation has reduced people's ability to progress by removing 'rungs' from the progression ladder', however, this conclusion appears to reflect the same cross-industry analysis used in DBIS (2010) and not a more rigorous analysis of the factors driving upward mobility.

## New issues

It seems clear that there are areas in which government policy needs more analysis or a better understanding of both routinisation and polarisation as they apply to a number of key objectives. Polarisation suggests a particular cause of increasing inequality, which could raise some concerns. However, policymakers need to acknowledge that there is a difference between a polarisation of occupations and a polarisation of other labour market outcomes, including wages. The occupational shifts towards 'lovely' jobs and 'lousy' jobs has been well demonstrated by Goos and Manning, but this may not have been reflected quite as clearly in wage distributions[3]. Occupations' relative wages may move around, as there are several possible wage effects that result from this shift in occupational demands.

First, as Autor, Katz and Kearney (2006) observe, there should be an increase in the relative wages of high-skilled non-routine labour. The change in wages of low-skilled non-routine labour is less clear-cut – in the absence of any complementarities, the increase in supply should drive down wages. However, this increased supply is driven in turn by falling wages of routine workers (who are competing with cheaper information and communication technology capital), so changes to the relative wages of the lowest earners are ambiguous. In the US, the wages of the lowest earners

[2] Similar problems are found in DFES and DWP (2007), suggesting that while government has been familiar with the polarisation literature for a while, it has yet to fully grasp its implications for skills requirements of firms.

[3] This was shown in a specific case in Holmes (2010) and extended in Holmes and Mayhew (2010).

grew faster than the wages of the middle earners over the 1990s, which could be explained by the routinisation hypothesis[4].

Second, there may be wage effects as the characteristics of workers in different occupations change. For example, the increase in demand for managerial occupations may mean employers have to take on workers who are less able to perform this role than those who had these jobs in the past. Thus, while the wages of managers should increase with greater demand, this assumes we are comparing like-for-like workers. Actual observed wages reflect the ability of workers as well. To give a second example, those that remain within declining routine occupations may be the best at the job, have the most valued skills, and thus have the most to lose if they moved to a different occupation. Those that leave may be those that have less to lose. We would expect to see the observed wage of routine occupations increase as a result, everything else being equal.

Holmes and Mayhew (2010) find that in the 1987 UK wage distribution, the number of managers and professionals has no significant effect on the middle of the distribution, whilst the 2001 distribution is sensitive to these types of employment. This suggests that managerial and professional work has expanded to include middle-income occupations as well as high wage occupations. They also find evidence that the relative wage of routine occupations has risen even while their employment share has dwindled. Moreover, wage distributions (and, as a result, wage inequality) have changed over the past 30 years due to a number of reasons, and whilst occupational structure has had some effect, it is just one factor. Changes in the composition of the workforce by gender, education and union membership have all had large effects on the wage distribution – some of which counteract the effects of shifts in the occupational structure – as have the decline in gender pay gaps and the rising wage premium to experience (which may capture the increasing value of soft skills or informal, on-the-job training). Overall, then, it is not immediately clear how polarisation has affected inequality, nor what could be done about this directly. There are, however, clearer implications in two related areas: meeting the skill needs of employers, and improving mobility.

On the former, the process of routinisation will have altered the needs of firms. For high-skilled non-routine occupations, there are two possibilities. The first is that firms would like to employ more managers and higher technical workers, but are restricted by the available labour supply as their demands grow. As a consequence, this may lead to them creating more lower-wage middle management positions as new recruits are less effective. In this case, there is a potential role for education and skills policy to supply more highly trained individuals, as better-trained workers will be utilised effectively. Alternatively, firms may be happy with the creation of these lower-level positions as it might result from a deliberate strategy. In this case, focusing on up-skilling those in the middle of the wage distribution alone may be ineffective if firms simply underutilised these skills. Policy would also need to be directed towards encouraging firms to better use these increased supply of skills.

For low-skilled non-routine occupations, the picture is somewhat bleaker. The increase in low-skilled non-routine work is likely to be a permanent feature – indeed, the faster growing wages at the top end of the distribution help support demand for many low wage service workers. These jobs are not likely to be up-skilled, so it is not clear that giving workers in these jobs more training will have any effect. This issue is yet to be properly addressed by UK policymakers, who tend to assume that more skills will lead to higher quality work without considering the strategies and choices made by firms.

Where training may yield positive results is by allowing individuals in low-wage non-routine work to progress out of these jobs over their working lives. The change in occupational structure may have altered established career paths within some industries. More entrants at lower levels, combined with smaller numbers of mid-level jobs would reduce mobility, particularly if the better jobs are filled with increasingly more qualified new entrants. This probably does not apply to all careers, so instead of thinking about large labour market-wide barriers, these barriers are less obvious and localised to certain types of work. Holmes (2011) shows how routinisation can affect mobility of workers, and how differences in qualifications and skills can mitigate some of the adverse effects. Level 2 and 3 academic qualifications and Level 4 vocational qualifications increase the chances that displaced routine workers move to higher technical occupations, whilst Level 4 academic qualifications increase the probability of moving to professional occupations. Vocational qualifications below Level 4 have little effect on mobility after displacement. The development of specific skills in routine occupations makes a worker significantly less likely to be displaced, whereas the accumulation of more general labour market experience allows workers to progress to managerial and intermediate occupations.

[4] In the literature, these wage growth patterns are also referred to as polarisation. For clarity, this Issues Paper refers to polarisation as strictly the change in the composition of occupations towards good and bad jobs, and away from mid-range jobs, however defined. The wage effects are referred to separately.

However, it also shows that some immobility (or, in some cases, downward mobility) cannot be explained by deficiencies in human capital. This suggests that there are non-human capital barriers faced by those displaced by routinisation. The source of these barriers is not immediately clear. It could be that newer entrants to the labour market are able to better position themselves in the routinised labour market. Alternatively, the organisation of work by firms and industries may create some additional barriers. This explanation has long been championed by labour market segmentation theorists, who argue that the creation of internal labour markets, occupational labour markets and secondary labour markets may facilitate career mobility for some individuals whilst impede it for others. Holmes and Mayhew (2011) provide an assessment of the continued relevance of these concepts for thinking about mobility and find that in some cases such arrangements are persistent, although in other cases, it is less easy to characterise occupations in such a convenient typology. What this means for those affected by routinisation is an unanswered question, but one that is relevant to any government interested in helping increase workers upward mobility.

## Conclusion

In the first few months of its term in office, the coalition government launched a consultation on its skills strategy and made several moves to indicate that improving social mobility would be a key aim. If it is to create successful policies in these areas, it will need to fully appreciate what changes are happening within the labour market, and what these changes mean for skill requirements of employers and for opportunities for career progression which ultimately drive upward mobility. At the very least, this will require thinking beyond the existing allegiance to the skill-biased technical change viewpoint.

## References


Autor, D., Levy, F. and Murnane, R (2003) 'The skill content of recent technological change: an empirical exploration', *Quarterly Journal of Economics*, 118(4).

Autor, D., Katz, L. and Kearney, M. (2006) 'The polarisation of the U.S. labour market', *American Economic Review*, 96(2).

DBIS (2010) 'Supporting analysis for "Skills for Growth: The national skills strategy"', Economics Paper No. 4, available online: http://www.bis.gov.uk/assets/biscore/economics-and-statistics/docs/10-604-bis-economics-paper-04

DFES and DWP (2007) 'A shared evidence base – the role of skills in the labour market', Research Report, available online: http://research.dwp.gov.uk/asd/asd5//rports2007-2008/roleofskillsreport.pdf

DWP and DIUS (2008) 'Life chances: supporting people to get on in the labour market', Discussion Paper, available online: http://research.dwp.gov.uk/asd/asd5//rports2007-2008/LifeChancesReport.pdf

Goos, M. and Manning, A. (2007) 'Lousy jobs and lovely jobs: the rising polarization of work in Britain', *The Review of Economics and Statistics*, 89 (1).

Holmes, C. (2010) 'Job polarisation in the UK: An assessment using longitudinal data', SKOPE Research Paper No. 90.

Holmes, C. (2011) 'The route out of the routine: where do the displaced routine workers go?' SKOPE Research Paper, forthcoming.

Holmes, C. and Mayhew, K. (2010) 'Are UK labour markets polarising?', SKOPE Research Paper No. 97.

Holmes, C. and Mayhew, K. (2011) 'Thinking outside the box? Assessing mobility through typologies of work organisation', SKOPE Research Paper, forthcoming.

Nunn, A., Johnson, S., Monro, S., Bickerstaffe, T. and Kelsey, S. (2007) 'Factors influencing social mobility', DWP Research Report No. 450, available online: http://research.dwp.gov.uk/asd/asd5/rports2007-2008/rrep450.pdf


## SKOPE Issues Paper Series

The purpose of the Issue Paper Series is to highlight some key areas of SKOPE's research and identify key findings that can inform policy makers, academics and practitioners.

For further information on SKOPE's work, see the website: www.skope.ox.ac.uk


Published at the ESRC Centre on Skills, Knowledge and Organisational Performance, School of Social Sciences, Cardiff University, Cardiff, CF10 3WT.