

Machines and software programs have replaced employees in many routine jobs in the middle of the income distribution. **Alan Manning**, who coined the term 'job polarisation', considers how much we should all be afraid.

Lovely and lousy jobs

The occupational structure of Britain's labour market has changed markedly in recent years. There has been rapid growth in the employment share of high-wage occupations, such as managers and professionals, and more modest but still positive growth in the share of low-wage occupations, such as shop assistants and care workers. But there have been significant falls in the employment share of clerical and manufacturing jobs in the middle of the income distribution.

Ten years ago, Maarten Goos and I charted this phenomenon of 'job polarisation' over the period 1979-99 (Goos and Manning, 2003). The evidence indicates that it has continued: Figure 1

Job polarisation raises inequality as the labour market splits into high- and low-wage work



We cannot ignore job polarisation – but with sensible policies, we can manage it

shows how the employment shares of different deciles of the occupational wage distribution have changed over the period 2002-10.

The most compelling explanation for job polarisation lies in the nature of technical progress. As David Autor and his colleagues noted a decade ago, machines come to replace people in routine tasks for which a software program of manageable length can be written to perform the task well (Autor et al, 2003).

For example, the job of a skilled craft worker in manufacturing involves precise work, but it is repetitive and relatively easy for a machine to replicate. Similarly, the job of a bank clerk used to require the ability to do arithmetic fast and accurately and was not defined as low-

skilled – but computers can do the sums both faster and without error. So the demand for both types of jobs has been falling.

If the primary cause of job polarisation is routine work being done by machines, then it seems likely to continue as computers become ever more powerful. But does that necessarily imply a dystopian future in which we are increasingly displaced by machines? Do we risk going the way of our equine friends, once literally the workhorses of the economy but whose costs to rear and feed rose above those of machines doing the same work and so ended up surplus to requirements?

As yet, it is not easy to design a computer that will manage people and motivate them: management remains something in which people have a comparative advantage over machines. And jobs like cleaning, which we think of as being unskilled because they require no special aptitude, are currently beyond the capability of computers. So there are good reasons for thinking that we are some way from the machines taking over.

First, while technology will undoubtedly continue to displace humans in some tasks, there is no reason to think that the jobs affected will always be the middle-skill ones. If computers end up diagnosing illness and prescribing treatment more effectively than doctors, then demand for doctors, among the highest paid occupations, will fall. And not all middle-skill occupations are being displaced: computers cannot yet replace nurses, who typically earn a

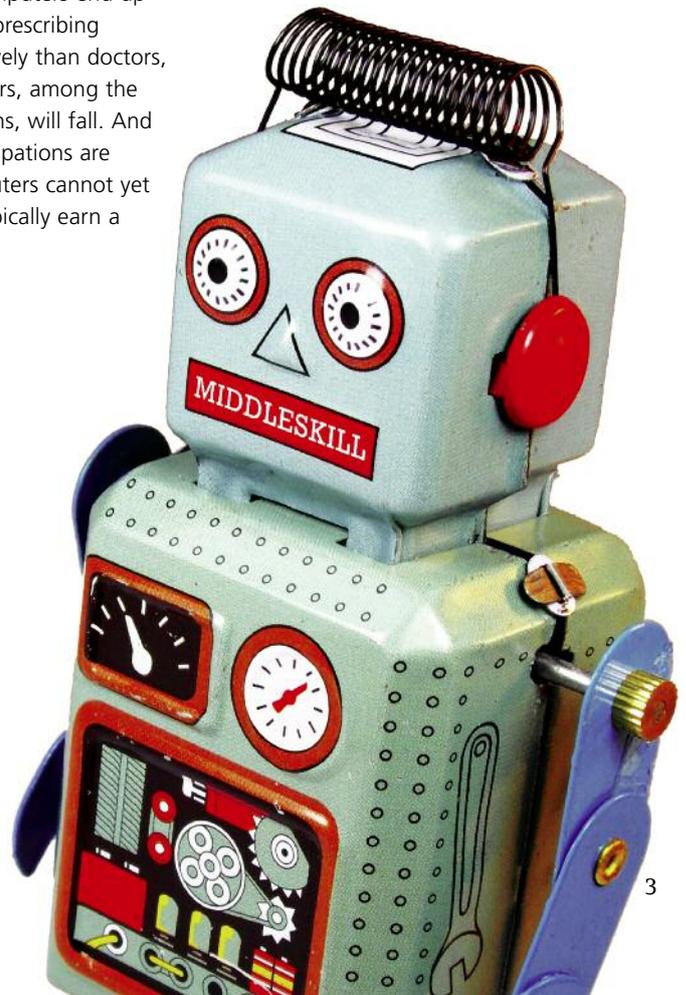
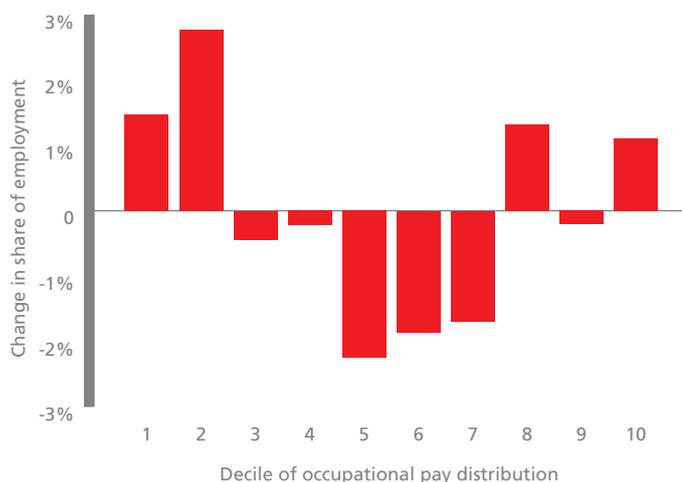
little bit more than the average salary and for whom the ageing population is raising demand. In 2012, average hourly earnings for nurses were £16.56 per hour; for the population as a whole, they were £14.87.

Second, there are things that can be done to lessen the impact of job polarisation. In large part, job polarisation matters because it raises inequality as the labour market splits into high- and low-wage jobs. But, the wages of different occupations are influenced by both the demand for the skills required to do the job and the supply of workers with the necessary skills.

The simplest way to realise the importance of the supply of skills is to imagine an economy where everyone has the same skills but someone still has to clean the toilets. In such an economy, the toilet cleaner will have to be paid more than everyone else because it is the most unpleasant job, and professional footballers, pop stars and chief executives would all be paid less. If such a world sounds unbelievable, it is because our world is one where not everyone has the same level of skills and the skills required to clean toilets are not in short supply.

It is sometimes argued that the 'hollowing-out' of the workforce means that improving education and skills for all

Figure 1:
Job polarisation in Britain, 2002-10



is a mistaken policy – that what is needed is a very high-quality education for young people destined for the high-paid jobs and only basic education for those who will be working in the low-paid jobs.

But while there is little point in equipping workers with skills for which there will be no demand, it is not true that increasing the level of education across the board is irrelevant. Imagine a situation where all the middle-skill jobs disappear, leaving only high- and low-skill jobs. The pay of the high-skill jobs relative to the low-skill jobs will be influenced by the share of the population who can do high-skill jobs: the higher this share, the lower will be inequality. Aiming for equality in the distribution of human capital will be as important as it has ever been.

But what of the view that human capital will be increasingly irrelevant in the future as innovation is biased in favour of capital and the returns to capital will be rising relative to the wages of labour? Paul Krugman made this argument in the *New York Times* in a column entitled ‘Rise of the Robots’ in December 2012. According to this view, wage growth no longer closely tracks productivity and the share of labour in national income – more or less stable for a long time – is in decline.

But two of my colleagues have shown that this view does not stand up well to close scrutiny (Pessoa and Van Reenen, 2013, summarised on pages 10-12 of this issue of *CentrePiece*). Any ‘decoupling’ between the wage growth of the average worker and labour productivity can be adequately accounted for by the rise in wage inequality and by the growing gap between income received by workers and the labour costs paid by employers because of such factors as rising healthcare costs, payroll taxes and employer pension contributions.

Indeed, rather than too much capital investment in robots, it seems more likely that Britain’s much-discussed current

stagnation in living standards is caused by too little capital investment. Rising wages have traditionally been associated with giving workers more capital with which to work and new capital tends to embody the latest technology.

But current levels of capital investment in the British economy – never the country’s strongest point – have become embarrassingly low in recent years. Internationally comparative data on the share of investment in GDP puts Britain 139th out of 153 countries, just behind El Salvador (though ahead of the United States).

Job polarisation continues to be an important feature of the way that Britain’s labour market is evolving. But there is little reason to believe that it will cause problems on an unmanageable scale. We cannot ignore it, but with sensible policies, we can manage it.

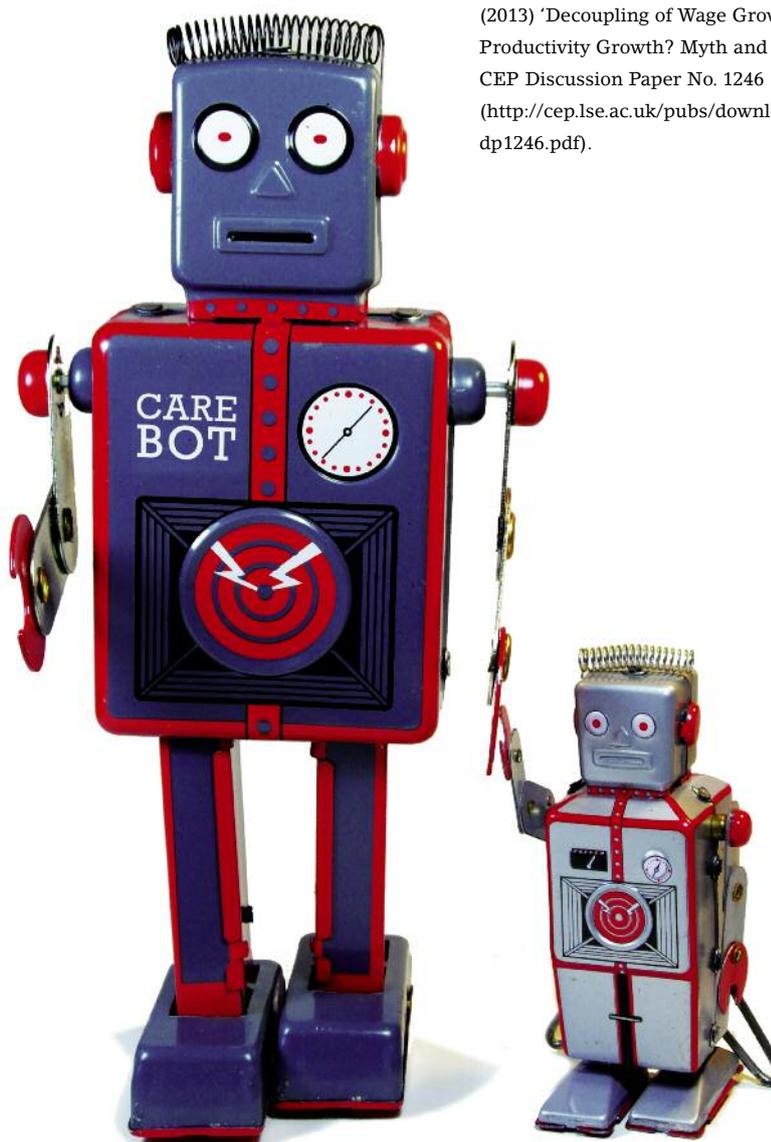
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Further reading

David Autor, Frank Levy and Richard Murnane (2003) ‘The Skill Content of Recent Technological Change: An Empirical Exploration’, *Quarterly Journal of Economics* 118(4): 1279-1333.

Maarten Goos and Alan Manning (2003) ‘Lousy and Lovely Jobs: The Rising Polarization of Work in Britain’, CEP Discussion Paper No. 604 (<http://cep.lse.ac.uk/pubs/download/dp0604.pdf>); subsequently published in 2007 in *Review of Economics and Statistics* 89(1): 118-33.

João Paulo Pessoa and John Van Reenen (2013) ‘Decoupling of Wage Growth and Productivity Growth? Myth and Reality’, CEP Discussion Paper No. 1246 (<http://cep.lse.ac.uk/pubs/download/dp1246.pdf>).



Aiming for equality in the distribution of human capital is as important as ever