



BANK OF ENGLAND

Speech

Climbing the Jobs Ladder

Speech given by

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It is fantastic to be here at Glanford Park Stadium, home of Scunthorpe United Football Club. I remember as a boy learning about how Liverpool legends Kevin Keegan and Ray Clemence started their careers here. Cricketing legend Sir Ian Botham started (and ended) his professional football career here too. A couple of weeks ago, my home town Guiseley entertained Scunthorpe in a pre-season friendly. Scunthorpe won 2–0.

Off the football pitch, it has not been all wins for Scunthorpe recently. Problems at the British Steel plant in the town have put at risk the jobs of 5,000 workers and a further 20,000 in its supply chain.¹ Hopefully, a new buyer can be found and jobs in the town and beyond can be assured. This is the latest chapter in what has been a long and sometimes painful story for the UK steel industry recently. It has been a recurrent theme of my visits around the UK, including in Redcar and Port Talbot.

The loss of signature industries can leave lasting social and economic scars – jobs lost, families disrupted, communities decimated. It is a pattern we see repeated across many industries in many advanced economies. It has been a key cause of the disaffection and disconnection felt by many and a potent polarising force in our politics, policies and societies. This polarisation is also a potent force shaping the fortunes of our economies, as I will go on to discuss.

The travails of the steel industry lead me neatly to the issue I want to discuss today – jobs and pay. In the UK recently, this has been a good news/bad news story. The good news has been the new jobs created – the best jobs recovery in the UK since at least the Second World War. The bad news has been the subdued performance of pay over much of that period – the weakest pay performance the UK has experienced since at least the Boer War.

I will first discuss recent developments in jobs and pay, before providing an account of them centred on movements up and down the jobs ladder. I will then turn to recent developments in the world and UK economies and their potential implications for monetary policy.

The Jobs Boom

The past few years have been a jobs bonanza in the UK. Since 2012, 3.4 million net new jobs have been created. Table 1 compares job creation across previous periods of UK economic recovery. No economic recovery since the Second World War has seen as many new jobs created. This leaves the UK employment rate at its highest (61.5%) and the unemployment rate at its lowest (3.8%) in half a century (Charts 1 and 2).

¹ <https://www.bbc.co.uk/news/business-48365241>

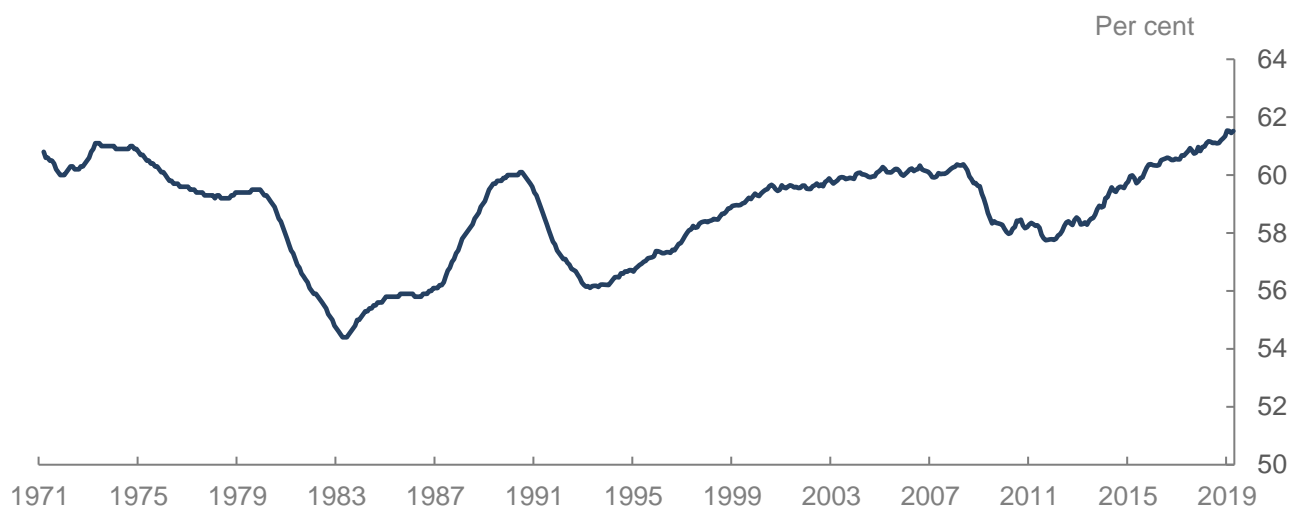
Table 1: Job creation in different UK recoveries

<i>Recovery dates</i>	<i>Job creation (millions)</i>
2011 Q4 - present	3.4
1993 Q1 – 2003 Q2	2.9
1984 Q2 – 1990 Q1	2.7
1977 Q4 – 1979 Q2	0.3
1972 Q1 – 1973 Q4	0.5
1952 – 1955	0.7

Sources: ONS and Bank of England Millennium of Data.

Notes: Data taken at quarterly frequency from 1970s and measure change in whole economy employment period during periods of sustained falling unemployment. Other definitions of recovery would of course suggest different amounts/periods of job creation, but it remains true that the current phase of job creation is high by historical standards.

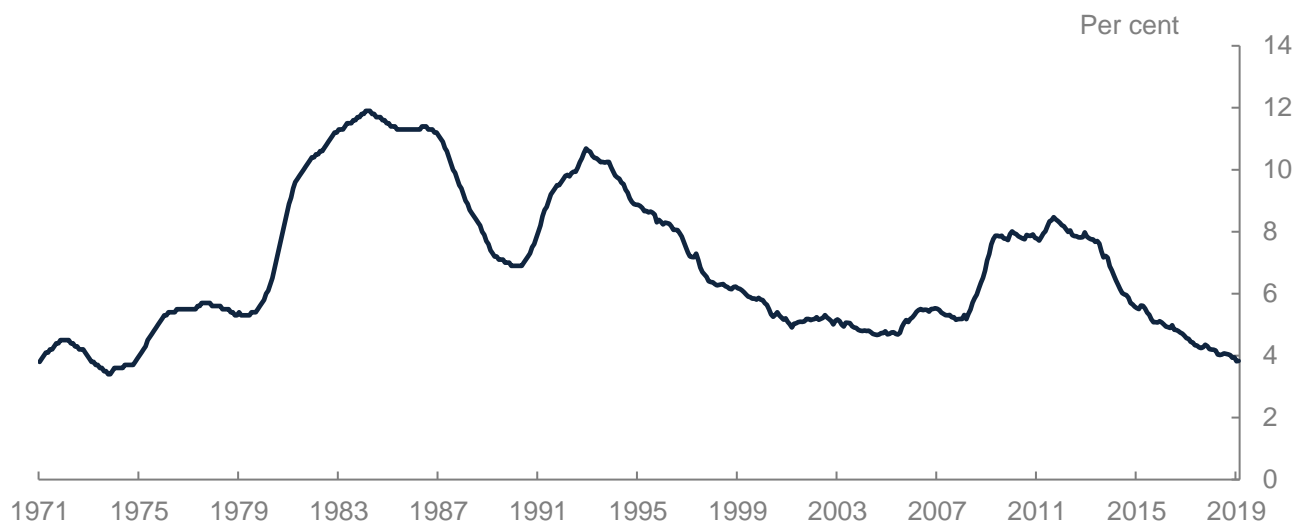
Chart 1: UK employment rate



Sources: ONS.

Notes: 16+ employment rate.

Chart 2: UK unemployment rate

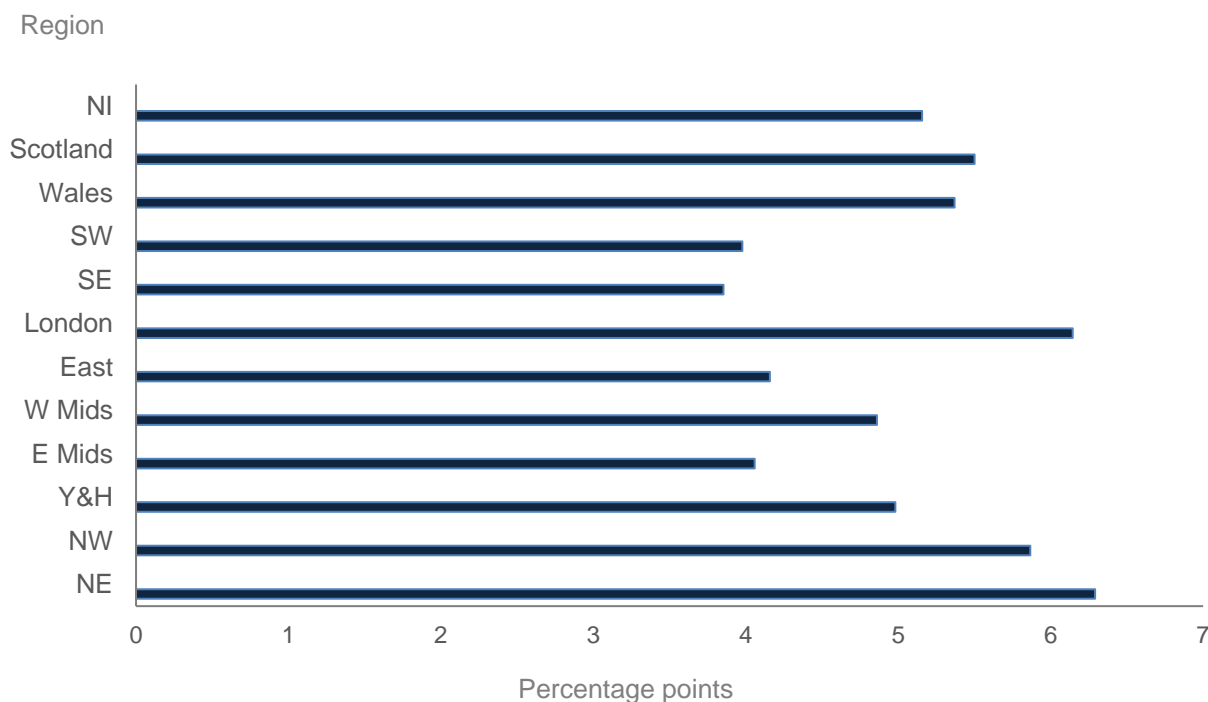


Sources: ONS.

Notes: 16+ unemployment rate.

This jobs bonanza has had a broad geographic base. Since 2012, unemployment has fallen by at least 4 percentage points in all corners of the UK (Chart 3). Unemployment here in Scunthorpe has also fallen significantly from its peak of over 11% during the financial crisis but, at around 7 ½%, remains well above the national average.

Chart 3: Fall in UK unemployment by region (latest vs. post-crisis peak)



Sources: ONS and Bank of England calculations.

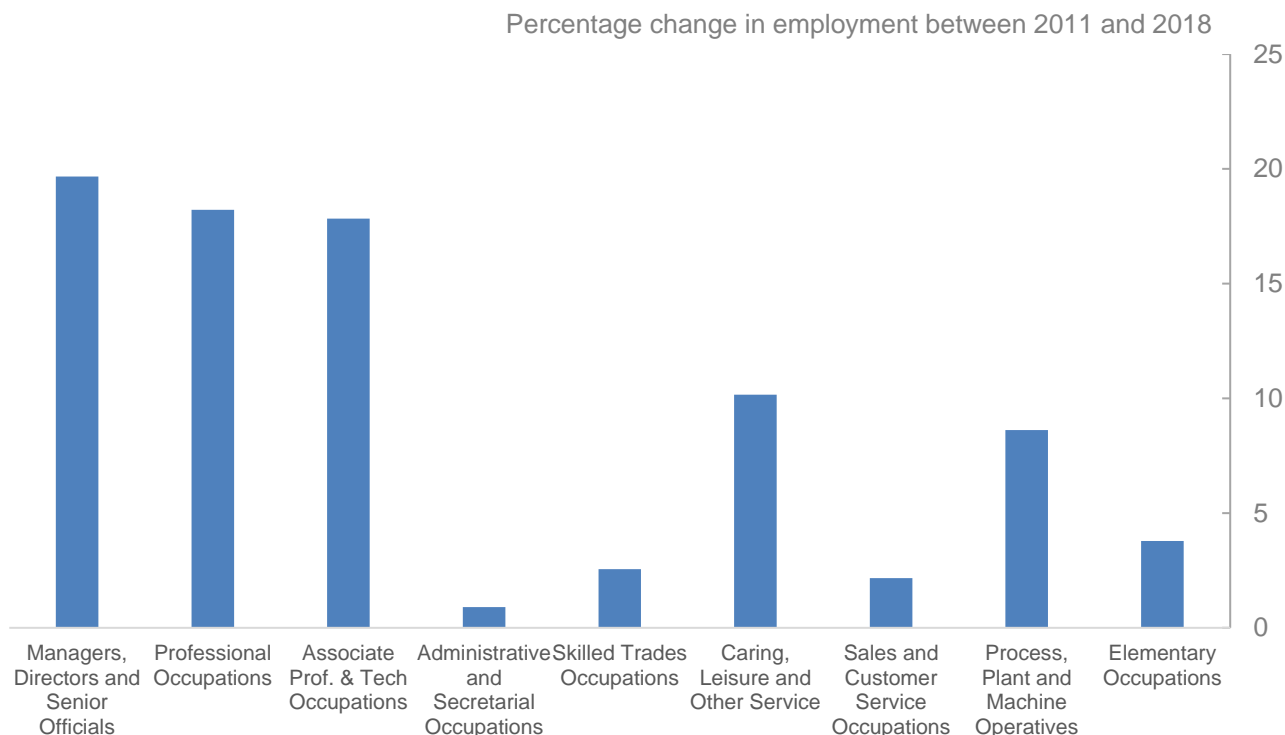
Notes: Data for NUTS1 regions. Changes between post-crisis peak and latest data in Labour Force Statistics.

A high quantity of new jobs is no guarantee of *quality*. Yet recent job creation has also been encouraging on that front. Of the jobs created since 2012, over 2.7 million or around 80% have been full-time. Around half (over 1.7 million) have been taken by women. Employment rates among the youngest (aged 16-24) and oldest (aged 55+) have both risen strongly, by around four to five percentage points, respectively.

The jobs bonanza has been fairly broadly-based across the occupational spectrum too (Chart 4). Unusually, all of the main categories of occupation have seen a rise in employment rates since 2012. As elsewhere, this boost has been largest at the higher-skill (such as managers and directors) and lower-skill (such as elementary occupations) ends of the occupational spectrum, with the mid-skilled benefitting least.²

² For example, Haldane (2018), Autor (2014) and Autor (2017).

Chart 4: Change in UK employment by profession



Sources: ONS and Bank of England calculations.

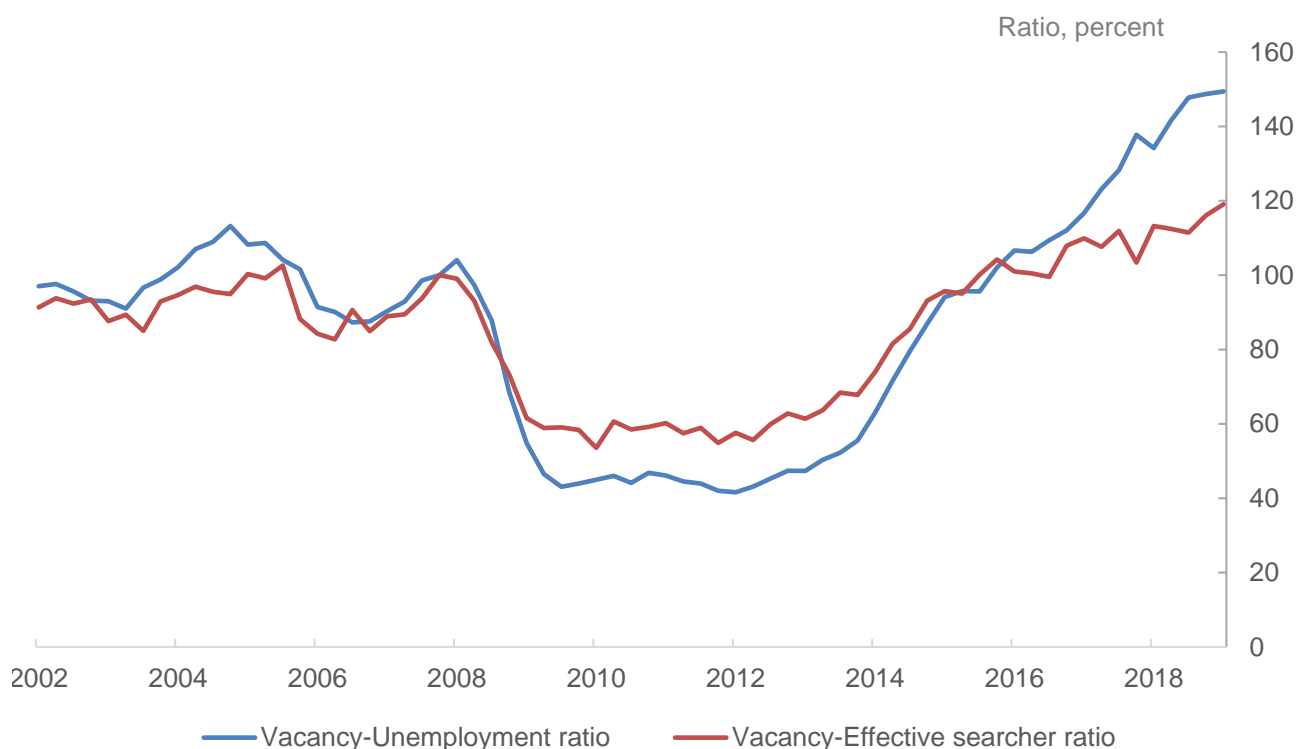
Notes: Ordering defined by ONS 1-digit SOC 2012 classification.

Despite a slowing economy, this large and evenly-distributed jobs bonanza has continued apace. The stock of available job vacancies – a measure of aggregate demand for workers – currently stands at around 830,000, close to its all-time high. After seven years of continuously creating jobs, and continuously falling unemployment, the UK labour market remains in rude health.

It also appears to be tight. One way of gauging that comes from comparing the stock of vacancies (V) in the economy (aggregate labour demand) with the stock of people seeking work (U, aggregate spare labour supply). Chart 5 plots two measures of the V/U ratio in the UK.³ They are at their highest since the 1960s. Both ratios also well in excess of 100%, suggesting demand for labour exceeds available supply.

³ The broader measure is the vacancy-effective searcher ratio, where effective searchers are a weighted average of the employed, unemployed and non-participants. The weights on the employed and non-participants are their job finding probabilities relative to the job finding probability of the unemployed. The unemployed therefore have a weight of one.

Chart 5: Vacancy to unemployment ratio

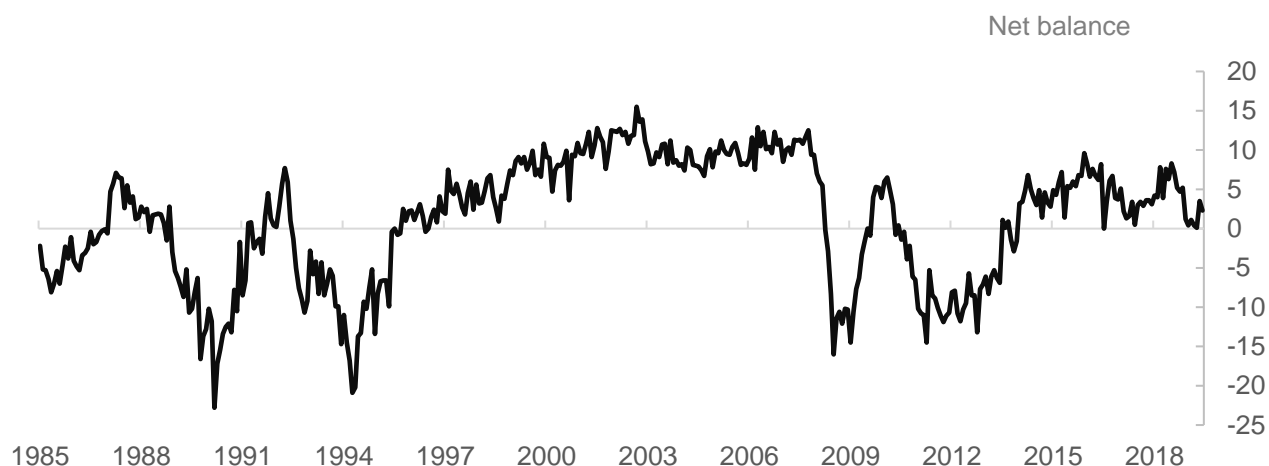


Sources: ONS and Bank of England calculations.

Other evidence confirms that picture. The UK unemployment rate (3.8%) is below the Bank's estimate of its long-run equilibrium rate (or NAIRU) of 4 ¼%. In business surveys, a majority of companies point to acute skills shortages across a range of professions and industries. When I asked on a recent visit to Northern Ireland about businesses' top three concerns, the answer was revealing: skills, skills and skills.

Surveys of workers tell a similar tale. Households' outlook for their financial situation is currently in line with historical averages and well above troughs in previous economic downturns (Chart 6). It is easy to be blasé and to forget just how big a societal shift this represents. Job insecurity was the scourge of the latter part of the 20th century. During the 21st, and in particular over recent years, that scourge appears finally and thankfully to have lifted.

Chart 6: Household financial position



Sources: GfK and Bank of England calculations.

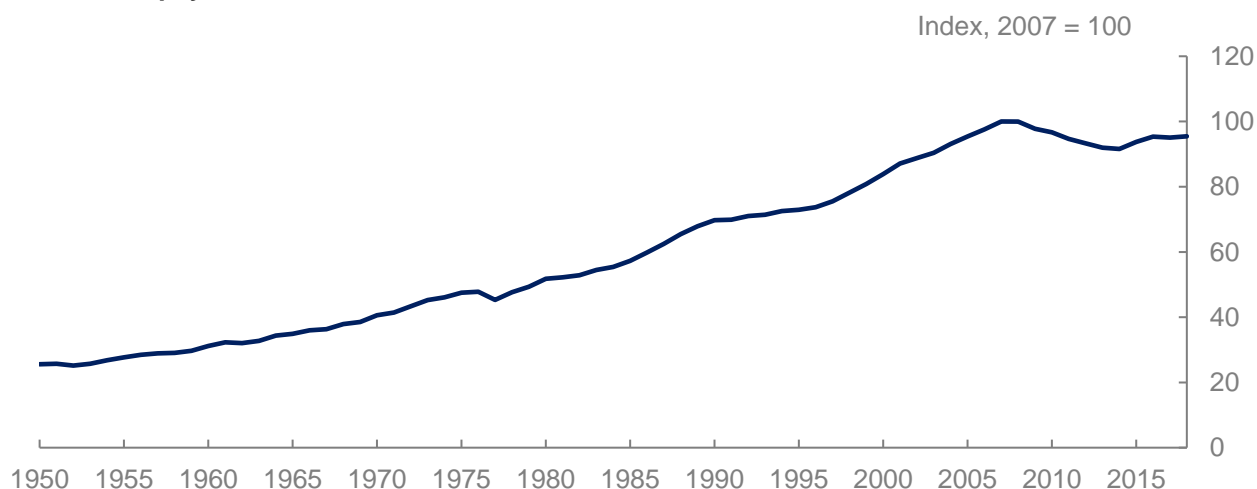
Notes: Question in survey asks, "How do you expect the financial position of your household to change over the next 12 months?" Net balance refers to proportion of respondents expecting improvement minus proportion expecting worsening.

The Pay Bust

A tight labour market is usually a recipe for rising pay. Yet until recently, there was little sign of pay picking up closer to rates seen before the crisis. Chart 7 plots inflation-adjusted pay in the UK over the past 70 years. For the first 60 of those years, real pay growth grew steadily at over 2 ¼% on average each year. Over the past 10 years, real pay growth has averaged *minus* 0.4% – a "lost decade" for the average worker.

Despite some recovery recently, that leaves the inflation-adjusted pay of the average UK worker still over 5% lower today than it was just prior to the crisis. You have to go back to the 19th century to find a similar period of stasis in UK living standards. The UK's jobs bonanza has been accompanied by a pay disaster.

Chart 7: Real pay

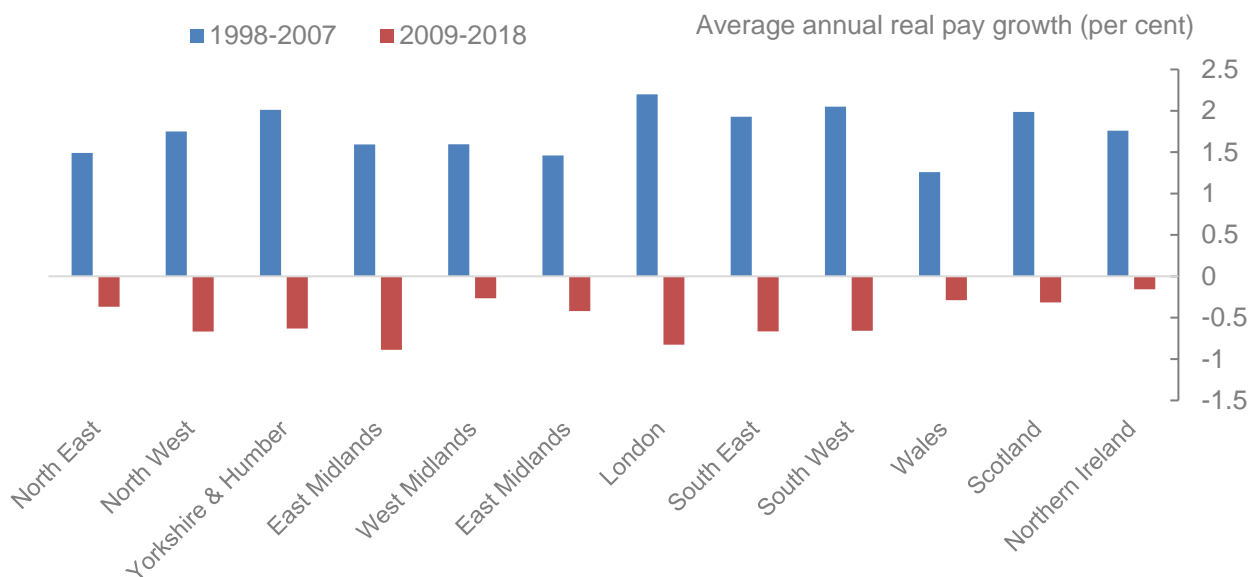


Sources: ONS, Bank of England Millennium of Data and Bank of England calculations.

Notes: Data at annual frequency using AWE deflated by CPI. Prior to AWE and CPI we use AEI and RPI, respectively, to extend the series backwards.

These falls in real pay have been widely spread geographically. Chart 8 compares average real wage rises across UK regions in the ten years either side of the global financial crisis. In the ten years prior to the crisis, all regions experienced annual rises in real pay, averaging between 1.3% (Wales) and 2.2% (London). These pay rises were roughly in line with pre-crisis economic growth rates.

Chart 8: Real pay by region



Sources: ONS and Bank of England calculations.

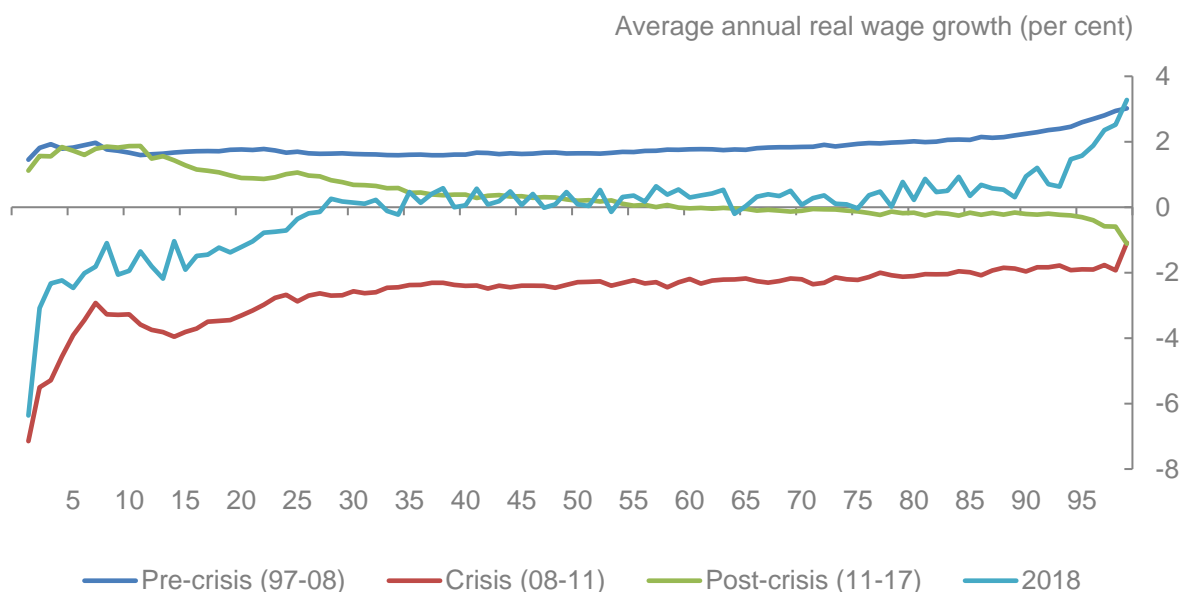
Notes: Data at annual frequency using median gross weekly pay in ASHE deflated by CPI. Regional calculations at NUTS1 level.

Over the past decade, average growth rates of real pay in every UK region have fallen into negative territory and well below average GDP growth rates in the economy over the same period (1.3%). The worst-affected regions have been the East Midlands and London. Scunthorpe has been towards the lower end of this pack, with real pay falling by, on average, 0.8% per year over the past decade.

The distribution of real pay rises across the wage distribution tells a nuanced story (Chart 9). In the decade prior to the crisis, real pay growth was fairly evenly distributed. The one exception was the top two wage deciles, where real pay growth averaged 2 ¼% – 0.5 percentage points higher than in the lower deciles.

The global financial crisis (2008-11) saw a sharp and significant amplification of these pre-crisis trends. The distribution of real pay rises fell below zero for all income groups. But while for the top two income deciles real pay shrank by *only* 2%, for the bottom two deciles it fell by 4%. This widened pre-existing wage inequalities. For the poor, this really was a Great Recession.

Chart 9: Real pay growth along the pay distribution



Sources: ONS ASHE and Bank of England calculations.

Notes: Data based on real weekly pay (using CPI as the deflator).

During the subsequent period of jobs recovery (2011-17), these distributional patterns went into reverse. Lower deciles of the wage distribution experienced real pay rises. For the bottom three deciles, these averaged around 1 ¼% per year. They came, at least in part, courtesy of the National Minimum and, subsequently, the National Living Wage. By contrast, real pay among the upper pay deciles continued to fall over this period. Wage inequalities began to shrink.

Until, that is, 2018 when real pay of the bottom two wage deciles fell by a further 2%, partly reflecting the effects of sterling's depreciation after the referendum which pushed up consumer prices faster than wages. The upper wage deciles appear largely to have been insulated from these pressures, with real pay rising by around 1% among the top two wage deciles.

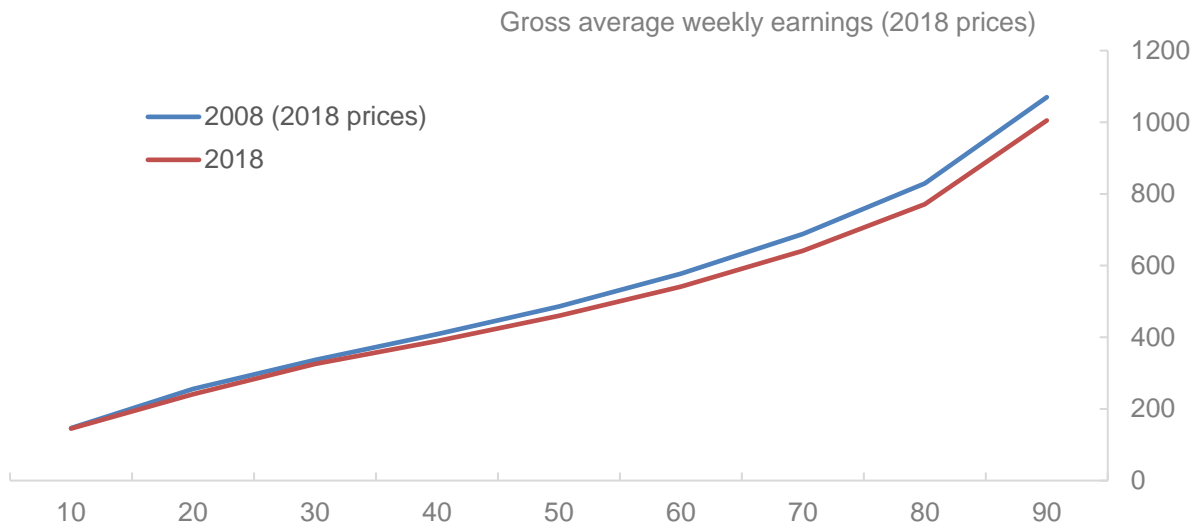
Comparing the past 10 years as a whole, real pay today is lower at every point along the wage distribution and, with the exception of the bottom decile, by broadly similar amounts of around 5% (Chart 10). These real pay falls have been felt by both men and women, by the young, middle-aged and young, and by the low, medium and high-skilled. The lost decade of pay was an equal-opportunity disaster.

Alongside this period of stasis in real pay have been some important on-going shifts in the nature of work. There has been strong growth in Alternative Working Arrangements (AWA), such as self-employment, zero-hours contracts and agency work (Chart 11).⁴ The number of self-employed, zero-hour contract and agency workers in the workplace has increased by 1.1 million, 0.7 million and 0.6 million, respectively, over

⁴ For example, Taylor (2017).

the past decade. There are now close to 1 million agency and zero-hours contract staff and 5 million self-employed.

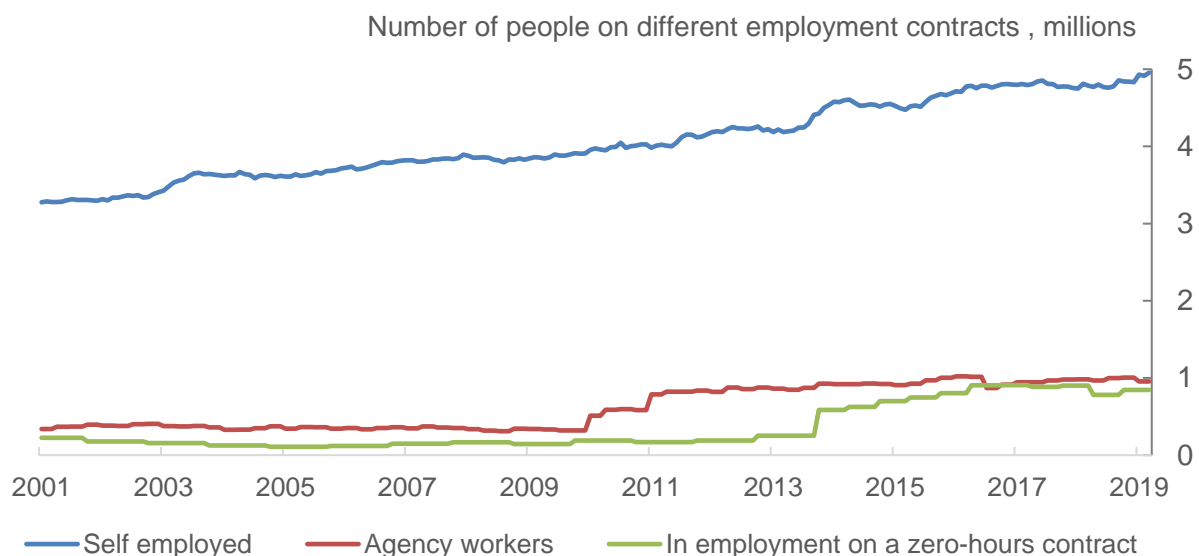
Chart 10: Real pay along the pay distribution



Sources: ONS and Bank of England calculations.

Notes: Nominal pay data for 2008 translated into 2018 prices using CPI.

Chart 11: “Alternative work” arrangements



Sources: ONS and Bank of England calculations.

Notes: Agency workers calculated on a quarterly basis using LFS data on those reporting to work for, or receive payment from, an employment agency in their main or second job. Data on zero hour contracts is published annually up to 2012, and then bi-annually from 2013. Zero hour contract and agency data are not seasonally adjusted. Some of the increase in the agency work and zero hours lines may reflect increased awareness and reporting.

These structural shifts in the workplace are often called the “gig economy”. Their common denominator is greater working time flexibility in the jobs contract. For some, this increased flexibility has been welcome. In

surveys, around 30% of workers says they have benefitted from this flexibility, particularly female workers (re-)entering the workforce and older workers tapering into retirement.⁵

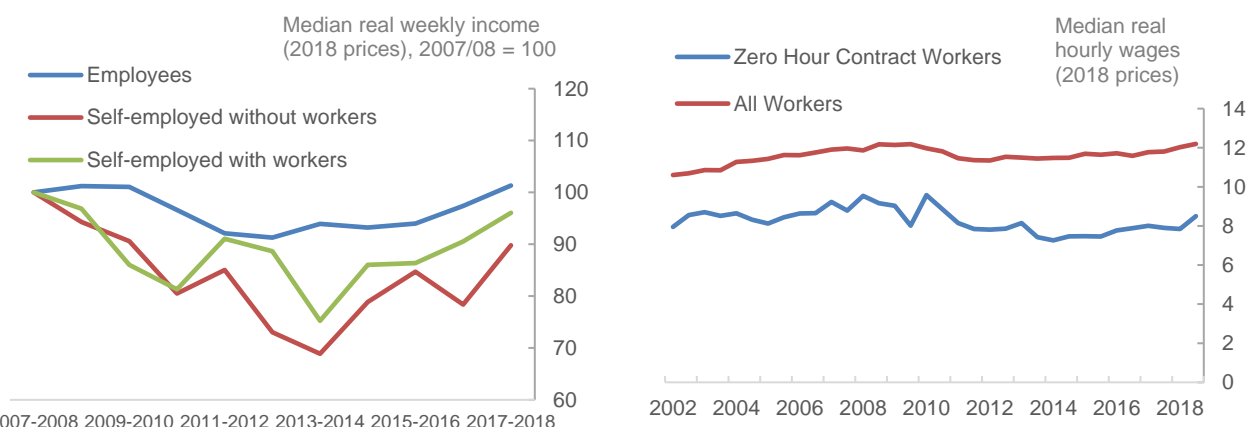
For others, though, these shifts in working arrangements have been a cause for concern. In surveys, around half to two-thirds of workers say they would prefer either to be working more hours or to have greater certainty around their hours.⁶ For them, AWA are not welcome flexibility but unwelcome insecurity. The TUC estimate that as many as 1 in 9 workers may be in work which is insecure in income terms.⁷

This income insecurity has been a key and recurrent theme in my recent discussions with charities, faith and community groups across the UK. For some, these income insecurities have been worsened by the introduction of Universal Credit. This has added time lags in payments to claimants, caused rising concerns about benefits sanctioning and has heightened uncertainties about eligibility for work criteria.⁸

Recent research by the Resolution Foundation has found that pay volatility in fact affects a significant number of UK workers, not just those on low pay or the gig economy.⁹ Over 90% of those who remained with the same employer during 2016-17 experienced at least one month when their take-home pay varied by more than 5%. This pay volatility is more prevalent for those on lower earnings and among the young.

Income volatility appears to have significant welfare costs for workers. A recent study found the average worker would be willing to sacrifice a fifth of their wage to avoid a variable work schedule set by their employer.¹⁰ In practice, gig workers tend to be paid less not more. Pay of self-employed and zero-hours contract workers lies significantly below employed and permanent contract counterparts (Chart 12). This is a malign coincidence of lower *and* less certain income.

Chart 12: Pay for alternative work



Sources: ONS and Bank of England calculations. With thanks to Steve Machin and Rui Costa at the CEP for kindly providing the data for these charts.

⁵ Datta, Giupponi and Machin (2018).

⁶ For example, Datta, Giupponi and Machin (2018) and <https://www.tuc.org.uk/news/two-thirds-zero-hours-workers-want-jobs-guaranteed-hours-tuc-polling-reveals>

⁷ <https://www.tuc.org.uk/news/1-9-workers-are-insecure-jobs-says-tuc>

⁸ <https://www.bankofengland.co.uk/events/2018/november/townhall-blog-scotland-november-2018>

⁹ Tomlinson (2018).

¹⁰ Mas and Pallais (2017).

These changes in the nature of work are likely to have contributed to the recent weakness of pay. The creation of larger numbers of, on average, lower paid jobs will have had a direct, dampening effect on pay. And income insecurity and the lack of unionisation among gig workers may also have lowered their pay bargaining power.

Summing up, then, a jobs boom has reduced the scourge of *job* insecurity that troubled workers in the past. But in its place has emerged a different scourge – static or lower pay and rising *income* insecurity. Job insecurity at the end of the 20th century has given way to income insecurity at the start of the 21st. This insecurity is an important part of the explanation for recent patterns in jobs and pay.

The Jobs Ladder

The framework most often used by macro-economists to explain pay and jobs is the Phillips curve – the negative relationship between pay growth and the *stock* of unemployment.¹¹ Despite reports of its demise, there is still reasonably clear empirical evidence of a Phillips curve in labour market data, once allowance is made for a possible downwards shift in the NAIRU and/or slope of the Phillips curve.¹²

An alternative, complementary, lens on the labour market comes from looking at *flows* of workers between jobs, rather than stocks of unemployed. There is a large literature studying the process by which people search for work and are matched into jobs.¹³ There is empirical evidence that job-to-job flows – the velocity of circulation in the labour market – can play a significant role in explaining wage growth.¹⁴

When studying labour market flows, a “jobs ladder” pattern of behaviour has often been found. In a growing economy, workers move between jobs by climbing a ladder of opportunities based on job characteristics such as relative rates of pay and firm productivity. The tighter the jobs market, the harder it is for companies to fill vacancies, the greater their incentive to offer workers higher-paid positions and the stronger the incentives among workers to move into these positions.^{15,16}

More productive firms are better able to offer higher rates of pay. This means more productive firms are also the ones most likely to expand, as they bid-away workers with higher pay offers. Less productive firms, by contrast, are unable to pay-up and are more likely lose workers and shrink. As workers climb the pay and productivity ladder, we would thus expect to see simultaneously higher levels of job moves, and higher rates of pay and productivity growth.¹⁷

¹¹ Phillips (1953).

¹² For example, Broadbent (2017).

¹³ For example, Pissarides (2000).

¹⁴ Melosi and Faccini (2019).

¹⁵ Moscarini and Postel-Vinay (2016) and Moscarini and Postel-Vinay (2018).

¹⁶ Abel, Tenreyro and Thwaites (2018) discuss the role of monopsony power in the labour market.

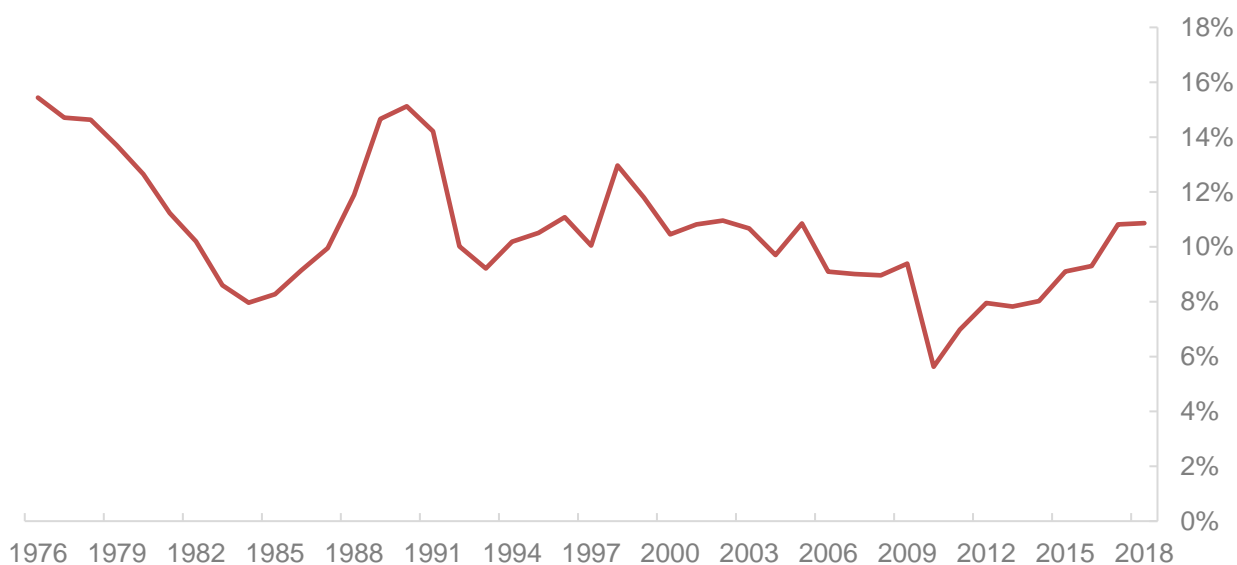
¹⁷ Moscarini and Postel-Vinay (2016) and Moscarini and Postel-Vinay (2018).

The reverse is true during a slowdown. Then, rates of hiring fall and rates of job transition slow. Workers are either forced off the jobs ladder entirely (“unemployment”) or, in coordination with employers, the labour market outcome results in them moving to a lower rung of the pay and productivity ladder (“under-employment”). Lower-productivity firms expand while higher-productivity firms shrink. The result is slower rates of job move and lower rates of pay and productivity growth.

One of the attractions of this approach is that it explains the velocity of circulation in the labour market, pay and productivity growth as a single, simultaneous process as workers traverse the jobs ladder. We do not need to rely on unexplained shocks to productivity to explain pay. Rather, it is behaviour by companies and workers which generates simultaneous movements in pay and productivity.

So how useful is this framework when characterising recent behaviour in the UK labour market? At a high level, this story fits the UK facts. Chart 13 plots job-to-job flows in the UK over recent decades. It displays a pro-cyclical pattern, with job moves picking up during a recovery and falling during a recession. From their low point in 2010, job-to-job flows in the UK have picked up as the labour market has tightened.

Chart 13: Job-to-job flows



Sources: ONS ASHE and Bank of England calculations.

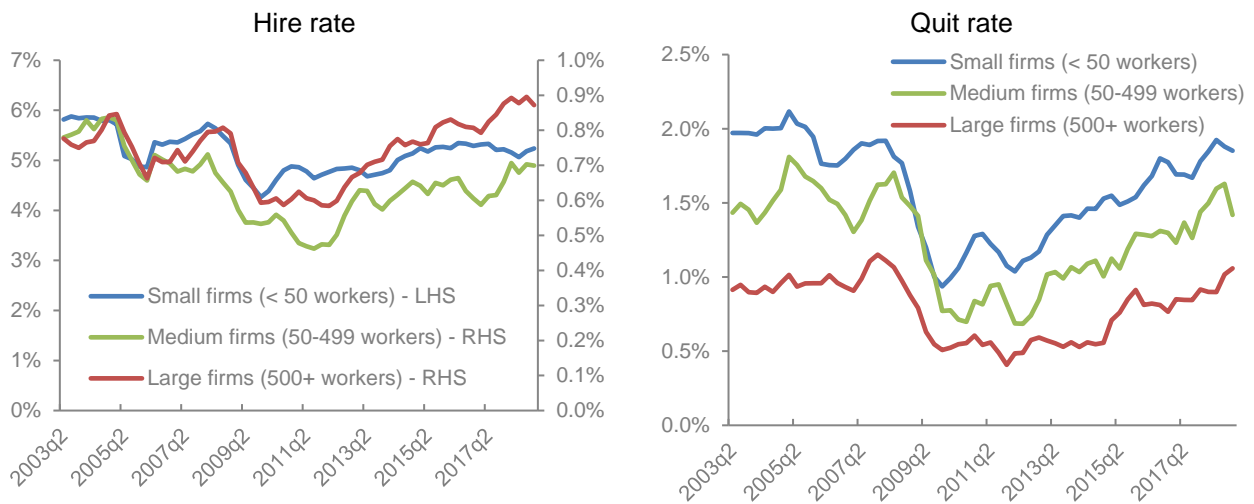
Hiring and quit rates among companies are also pro-cyclical, as we would expect. More than that, the degree of pro-cyclicality in hiring is strongest, and in firing is weakest, among the medium and large firms. To the extent size is a proxy for productivity, this is also as we would expect.¹⁸ During expansions, more productive firms hire more, and lose fewer, of their workers than less productive firms (Charts 14a and 14b).

Other patterns in the data less obviously fit the facts, however. Despite jobs flows picking up, pay growth has until reasonably recently remained slow and low. Meanwhile, productivity growth has remained

¹⁸ For example, Bernard et al (2014) and Wales et al (2018).

stubbornly subdued despite a seven-year jobs recovery. So has the jobs ladder broken? Have its rungs been removed? To understand these developments, it is useful to break the decade down into phases.

Charts 14a and 14b: Hire and quit rates by firm size

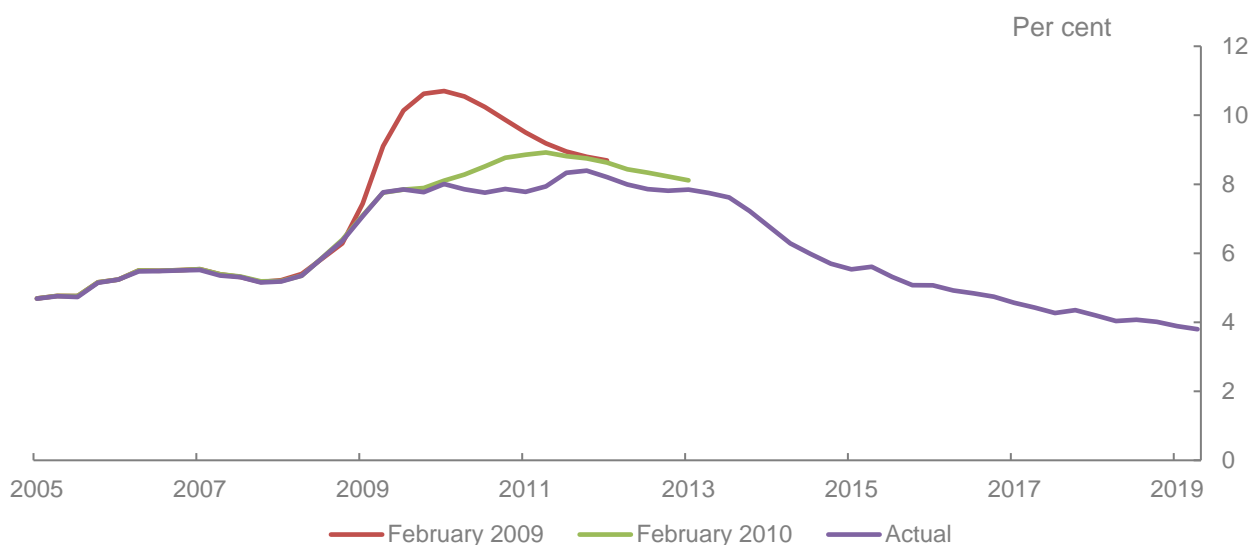


Sources: ONS LFS and Bank of England calculations.
 Notes: Charts show four-quarter moving average of hire and quit rates.

(a) Descending the Jobs Ladder

The global financial crisis generated a sharp fall in output. Given that fall, the subsequent rise in unemployment was more modest than expected. Between 2008 Q1 and 2009 Q2, UK output fell by around 6 ¼%, while unemployment rose by just over 2 ½ percentage points. By comparison, in the early 1990s recession output fell by around 2% peak-to-trough, while the unemployment rate increased by over 2.5 percentage points.

Chart 15: Forecasts for unemployment

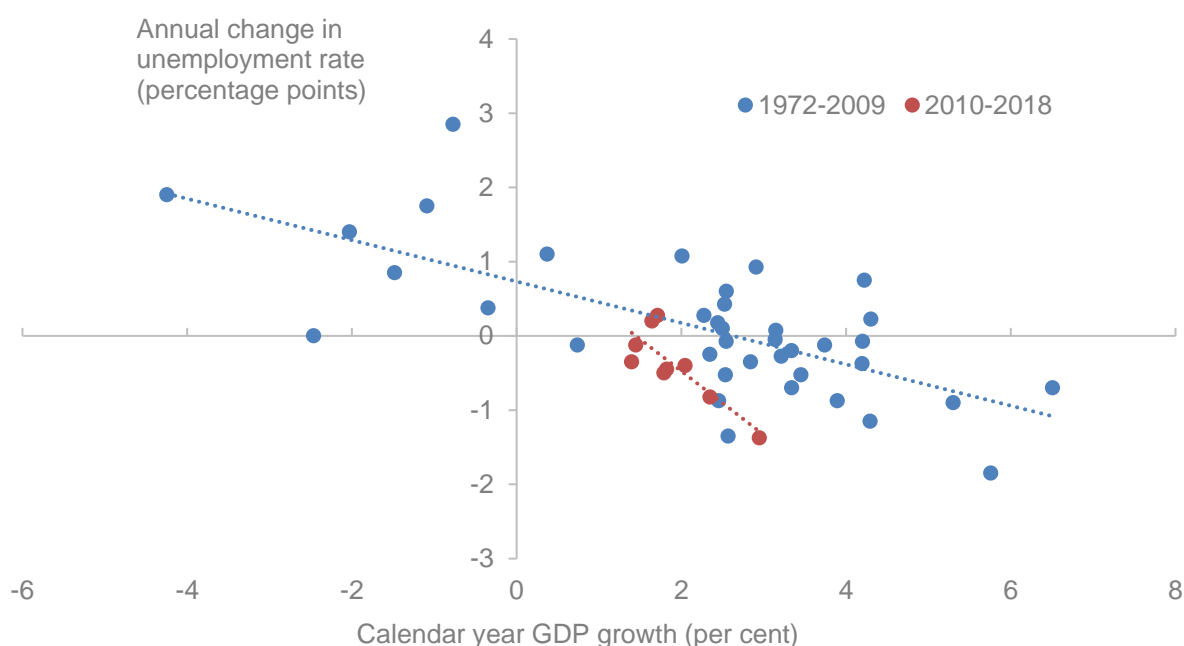


Sources: ONS, Bank of England and Bank of England calculations.

Put differently, in the immediate aftermath of the global financial crisis, unemployment rose by less than was expected by most mainstream forecasters, including the Bank. Chart 15 shows Bank forecasts for unemployment in early-2009 and early-2010. Having expected unemployment to peak at over 10.5%, the eventual peak of 8.5% was reached in late-2011.

More recently, the “Okun’s Law” relationship appears to have steepened as weak productivity growth since the crisis has seen unemployment fall sharply since 2012 despite more modest GDP growth (Chart 16).

Chart 16: Okun’s Law



Sources: ONS and Bank of England calculations.

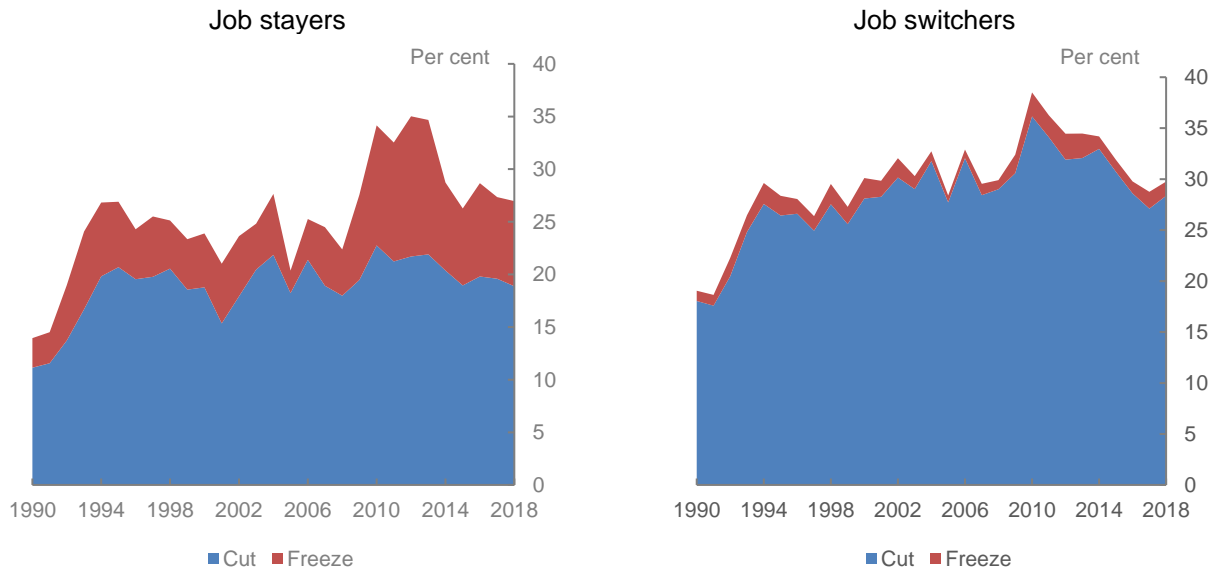
Notes: Chart shows calendar year GDP growth plotted against annual percentage point change in calendar year average unemployment rate.

A different way still of illustrating, and explaining, these developments comes from looking at job moves. As the crisis struck, job-to-job movements fell. Instead of moving between jobs, workers instead transitioned into unemployment. But these transition rates into unemployment rose by less than in previous recessions. Workers and their employers bargained to remain on the jobs ladder rather than jumping-off.

Remaining on the ladder did, however, come at a cost in terms of pay. For workers staying in the same job this meant accepting pay freezes, with the fraction of workers accepting these rising sharply during the crisis (Chart 17a). For workers moving, this meant moving down the jobs ladder by accepting lower-paying jobs at lower-productivity firms: the fraction of switchers taking pay cuts spiked during the crisis (Chart 17b). Median wage growth for switchers fell from over 9% in 2007 to 4 ½% by 2010 (Chart 18).

At the time of the global financial crisis, then, workers and their employers were faced with a stark outcome of job insecurity (jumping off the ladder) or income insecurity (stepping down the ladder). Unlike in previous recessions, most chose the latter path. The result was lower-than-expected unemployment, but weaker pay and productivity growth.

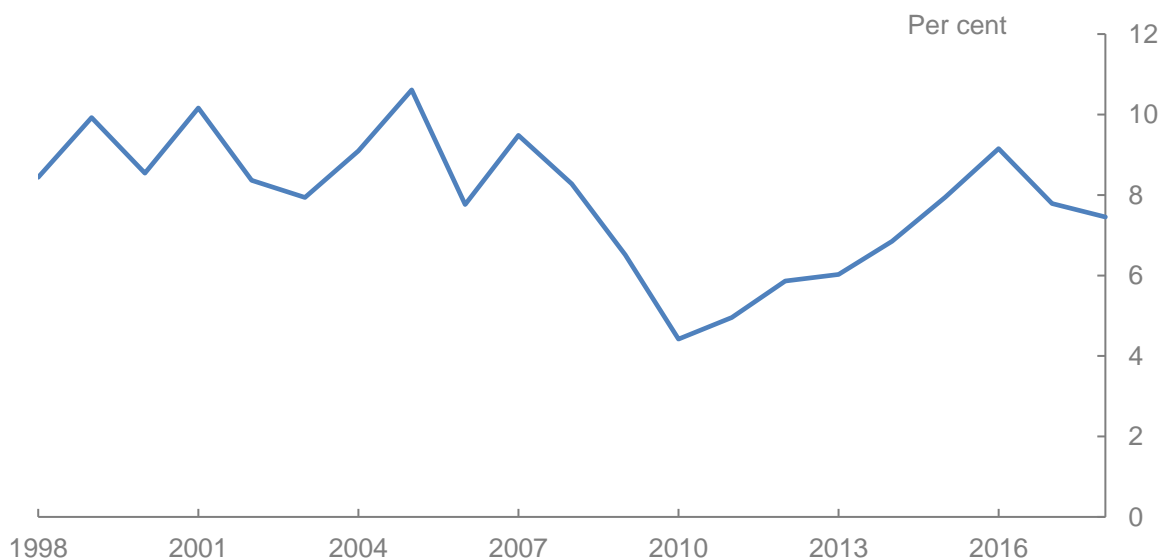
Charts 17a and 17b: Proportion of workers facing nominal pay freezes or cuts



Sources: ONS ASHE and Bank of England calculations.

Notes: Chart shows percentage of workers either in current job or moving job who faced nominal pay cuts or freezes in a given year.

Chart 18: Wage growth for job movers



Sources: ONS ASHE and Bank of England calculations.

Notes: Median hourly pay.

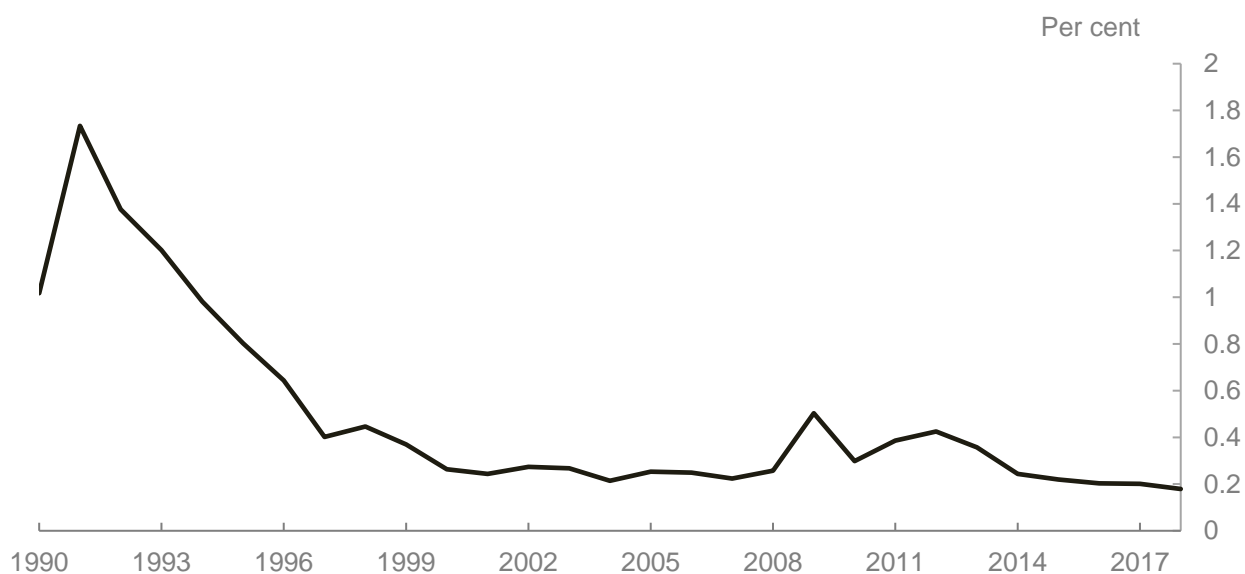
(b) *Climbing the Jobs Ladder*

As the economy recovered after the crisis, so did aggregate jobs growth. In response, workers began to climb the jobs ladder, with transition rates between jobs rising. We would expect this to have then boosted aggregate pay and productivity, as workers rotated into higher-paying, more productive firms. In practice, this process appears to have been sluggish for pay and to have stalled for productivity. Why?

There appear to have been two effects at play in slowing the rate of climb up the jobs ladder. First, although the rate of jobs transition picked up, it did so only slowly, especially given the degree of underlying strength in the jobs market. Despite picking up, the velocity of circulation in the labour market has remained relatively subdued in the face of the biggest jobs bonanza since the Second World War.

Job-to-job transition rates have only just reached their pre-crisis levels after seven years (Chart 13). And that still leaves them around 25-30% below their peaks in the 1970s and 1980s. This relatively subdued pattern is even more striking if we compare transition rates with the degree of tightness in the labour market, defined by the V/U ratio (Chart 19). This suggests job-to-job transitions have not really picked-up at all over recent years, when measured relative to the strength of the jobs market.

Chart 19: Ratio of job-to-job transition rate to V/U



Sources: ONS, Bank of England Millennium of Data and Bank of England calculations.

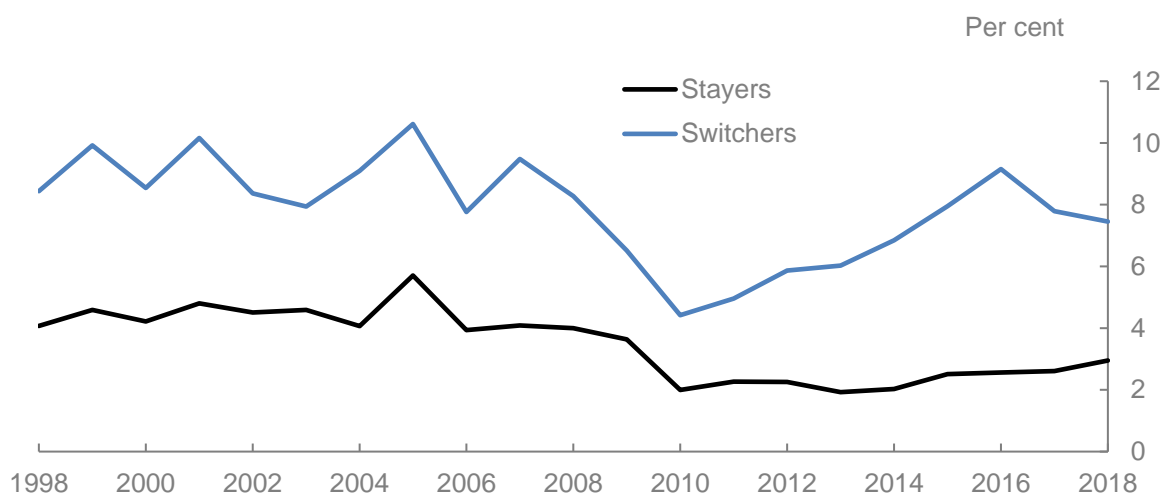
What explains these subdued rates of job transition? A strong candidate is that 21st century scourge, income insecurity. The crisis scarred risk appetite. Risk-aversion discourages workers from moving to reach higher rungs up the jobs ladder.¹⁹ It also discourages companies from offering workers those higher-rung positions. Risk scarring slows the velocity of circulation in the jobs market and hence pay and productivity growth.

¹⁹ One rationale for risk-aversion in moving to higher paid jobs at a different firm could be so-called “last-in-first-out” whereby new workers are mostly likely to lose their jobs in the event of redundancies.

This risk-aversion has not been confined to those switching jobs; it has also affected those staying put. A reluctance to move reduces these workers' bargaining power, weighing on their pay. Put differently, if companies are less fearful of workers being poached, for a given degree of the strength in the jobs market, they will feel less need to pay-up to retain those workers.

There is evidence of this behaviour in the differential pay growth of stickers and switchers recently (Chart 20). Switchers have consistently experienced higher rates of pay growth than stickers, as we would expect. But it is striking how this differential has widened as the labour market has tightened over recent years, with movers securing pay increases of 7-9%, while stickers' pay growth has until recently flat-lined at 2-2½%.

Chart 20: Switchers' and stayers' pay growth



Sources: ONS and Bank of England calculations.

(c) Rungs on the Jobs Ladder

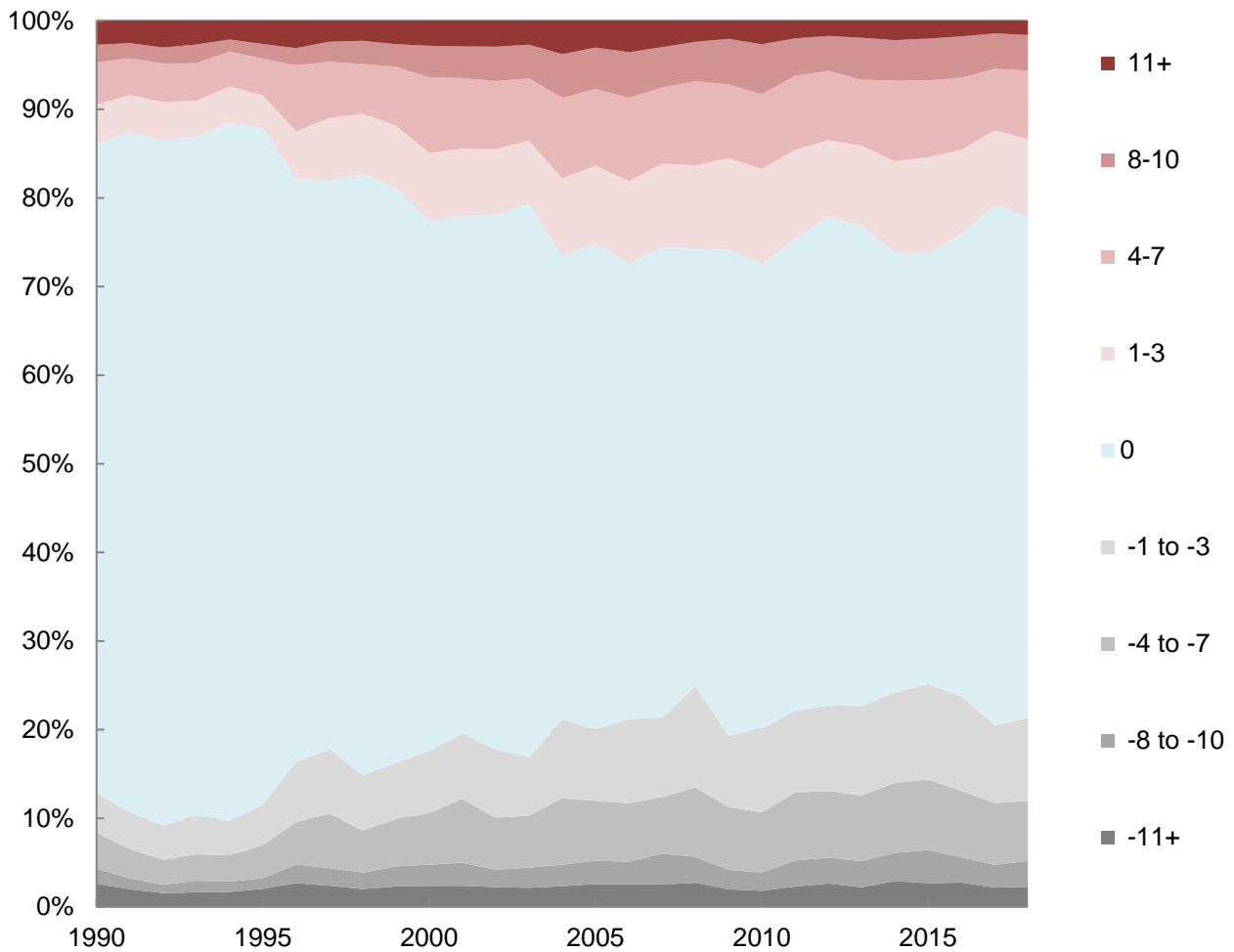
The second dynamic at work is that even those climbing the ladder have tended to do so at a less rapid pace than in the past. Or, put differently, the rungs in the jobs ladder have been closer together. This, too, may have reflected workers' unwillingness to move occupation, industry or geography at a time of increased income insecurity.

The Resolution Foundation has recently looked at rates of movement between UK regions.²⁰ They find that rates of geographic mobility – people taking a new job in a different region – has been lower since the crisis than in the preceding period. Their analysis finds that this reduction in mobility is driven by the young and, in particular, young graduates. Graduates under the age of 35 were close to 6 times more likely to move region and employer than non-graduates in the 1990s but are now just 3 times more likely. And mobility has decreased for both groups.

²⁰ Clarke (2017).

Charts 21 and 22 look at rates of worker transition between different industries and occupations. These moves are grouped into “rungs” on the ladder, where the rungs for the 9-rung occupation ladder are ordered by the standard ONS classification, which itself reflects differences in skills used within each occupational group. For the 21-rung industry ladder, the rungs are ordered by the mean hourly gross pay of workers within each industry, across the whole sample period. The blue zone defines zero rung movements. The red zone defines large upward rung movements and the grey zone large downwards movements.

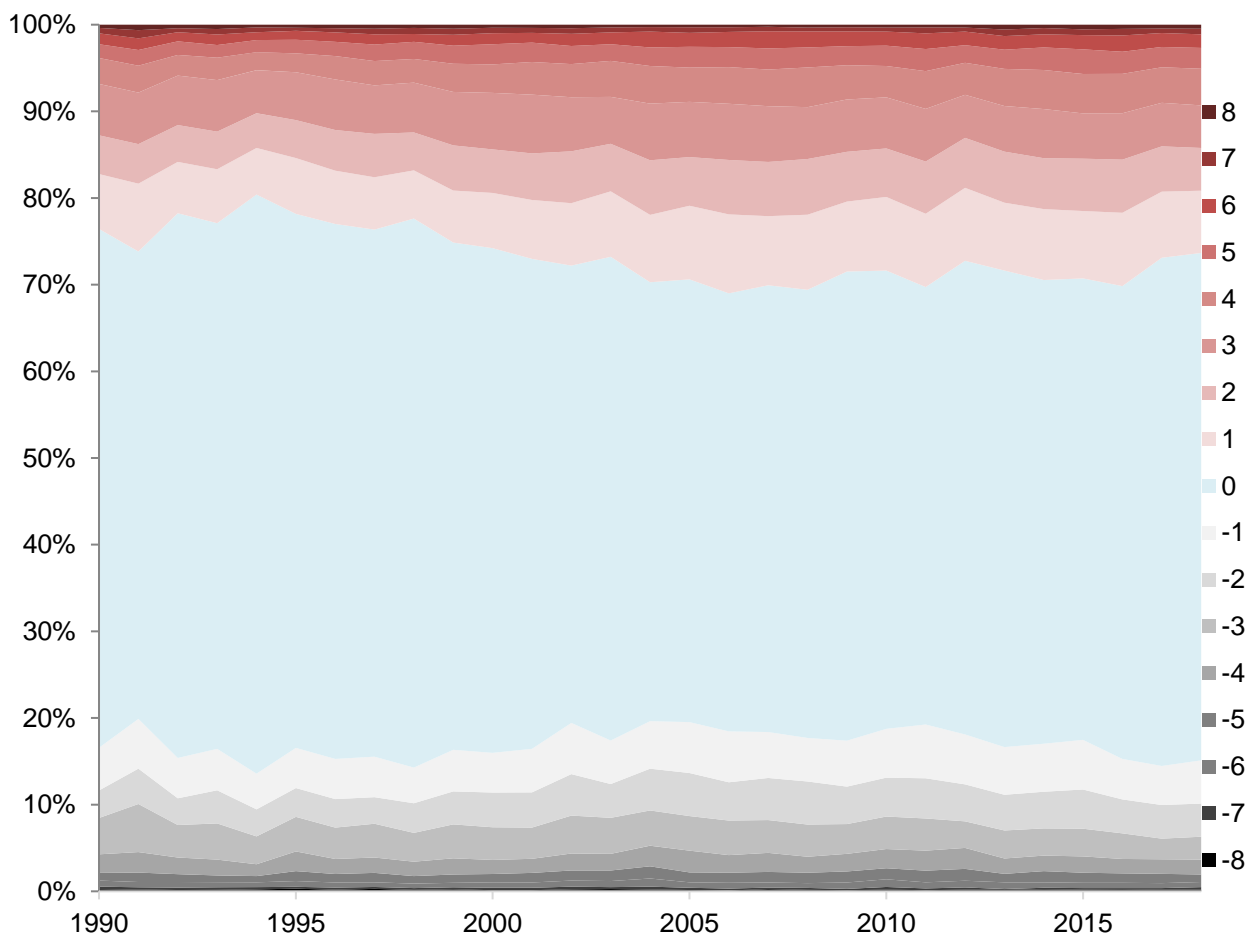
Chart 21: Industry job ladder



Sources: ONS and Bank of England calculations.

Notes: Chart shows percentage of jobs moves based on extent of upward or downward movement along the industry job ladder.

Chart 22: Occupation job ladder



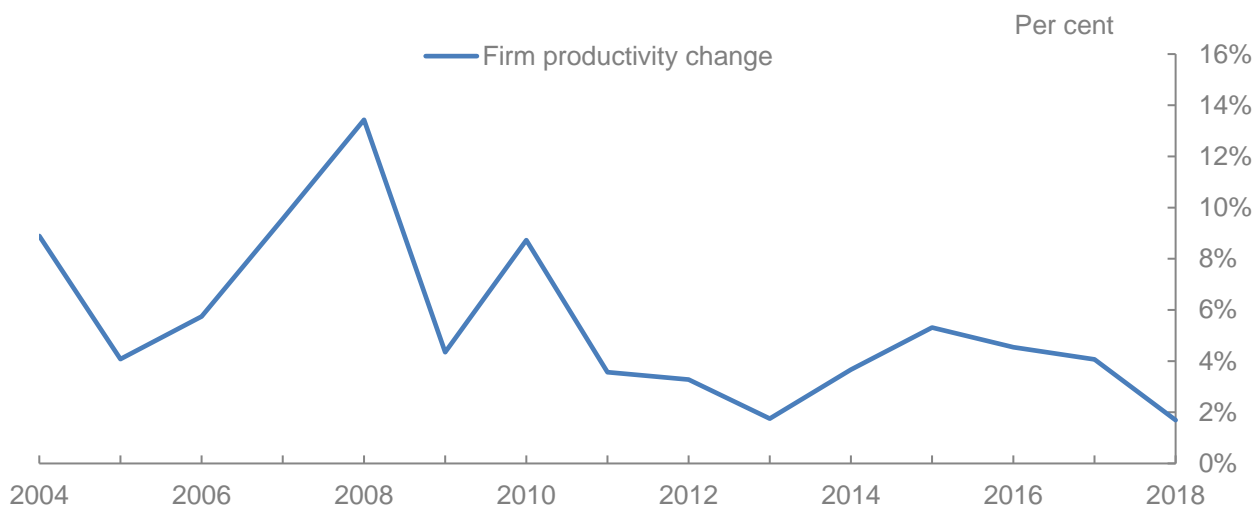
Sources: ONS and Bank of England calculations.

Notes: Chart shows percentage of jobs moves based on extent of upward or downward movement along the occupational job ladder.

During the crisis, we would expect a larger number of moves down the industry and occupational ladder. There is some evidence of that, with the lower tail (grey zone) fattening and the upper tail (red zone) thinning a little. Thereafter, as the jobs market recovered, we would expect a fattening of the upper tail (red zone) and a thinning of the lower (grey and blue) zones. There is no real evidence of that. The zone of small rung movements has remained fairly static.

We get a similar story if we look at the company destination for jobs moves, ranked by productivity. We would expect to see workers move down the productivity ladder during downturns and to rescale that ladder during upturns. The first part of that story is borne out in the data. Rates of productivity gain from a job switch fell from around 8% pre-crisis to around 3% afterwards. More surprising is that there has been no recovery in these rates of productivity gain during the subsequent jobs recovery (Chart 23). The rungs in the jobs ladder have had a smaller productivity spacing than in the past.

Chart 23: Firm productivity difference when moving jobs



Sources: ONS and Bank of England calculations.

Notes: Chart shows percentage difference in productivity between new firm and old firm with the median workers moves between firms.

Summing up, then, a strong jobs recovery has not resulted in workers vigorously re-climbing the jobs ladder. Both their willingness to climb, and the pace of this climb, has been subdued relative to the strength and tightness of the jobs market. Post-crisis risk aversion, and changes in the nature of work, may have increased insecurities and dimmed workers' appetite for a vertiginous career climb – or indeed any climb. The result has been subdued rates of pay and, in particular, productivity growth.

Just recently, some of these patterns in pay, if not productivity, have begun to reverse themselves. Nominal pay growth has been going slowly through the gears over the past few years, from being in the “low 2s” three years ago, to the “high 2s” 18 months ago to having a “3” in front of it now. Private regular pay growth is currently running at 3.7% year on year.

The reasons for this rise can also be found, to some extent, in job dynamics. There is only modest evidence that those moving position are climbing the ladder any faster. But it is notable that, as the labour market has tightened and skill shortages have emerged, we have seen pay growth among stickers beginning to rise after a long period of tranquillity. In other words, employers' increased appetite to retain staff, and employees' increased willingness to consider moving, appears now to be affecting pay.

This might also help explain why, although pay has picked up (as stickers are rewarded not to move), there is little sign so far of productivity following suit (as job moves towards higher-productivity firms have not picked-up). With productivity subdued alongside higher pay, growth in annual unit wage costs is now running at elevated levels of over 2 ½% year on year.²¹ That is in excess of levels consistent with meeting the Bank's inflation target and begs a question about the stance of monetary policy, to which I now turn.

²¹ Bank of England estimate using monthly AWE, employment and monthly GVA.

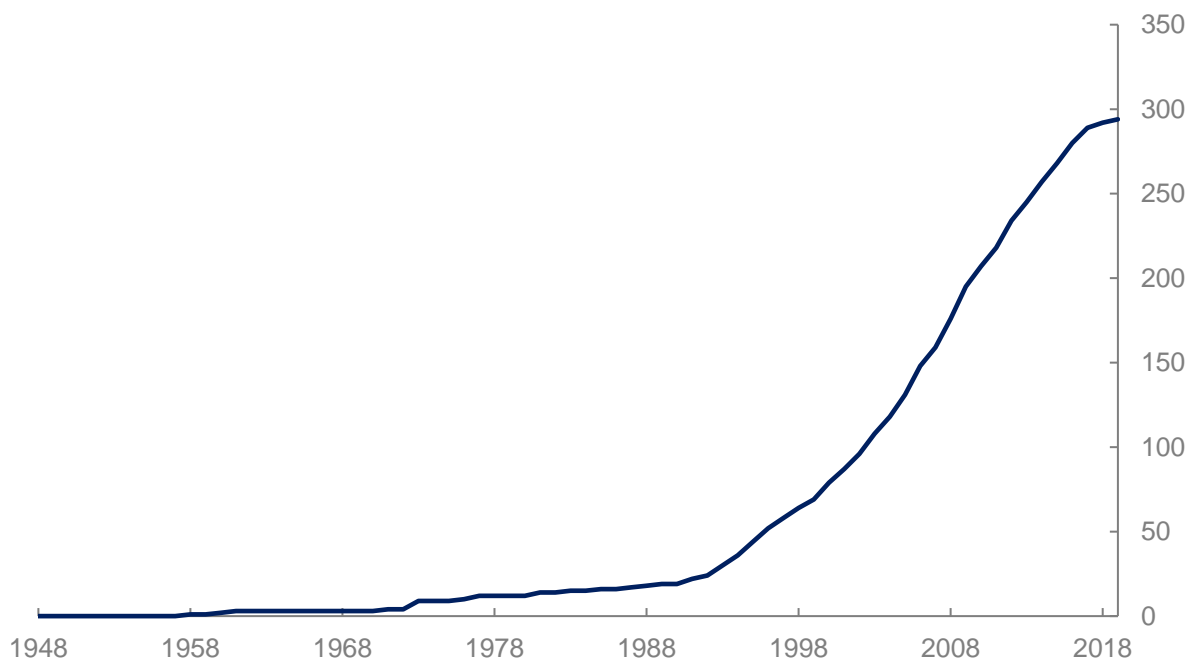
A Polarised Economy

At present, we are being fed a rich daily diet of news about polarisation in our politics and societies, globally and nationally. Perhaps it should come as no surprise, then, that there are also signs of polarity when it comes to the prospective fortunes of our economies, globally and nationally. Certainly, downside risks to the global and UK economy have increased through this year.

At the global level, a key current source of risk is trade. For a 60-year period after the Second World War, barriers to trade were significantly and systematically dismantled, courtesy of multilateral trade liberalisation initiatives. Almost 300 global trade agreements were reached between 1950 and 2018 (Chart 24). As a result, global tariffs have fallen by two-thirds since the early 1990s (Chart 25).²²

The dismantling of trade barriers ushered in a halcyon period of rising trade peace and prosperity. Global goods trade volumes grew, on average, by 10% per year between 1950 and 2008. Global supply chains lengthened and deepened.²³ A post-War consensus forged global cooperation in trade, finance and security, embedded and embodied in the Bretton Woods institutions which this year celebrate their 75th birthday.

Chart 24: Cumulative WTO-notified regional trade agreements in force

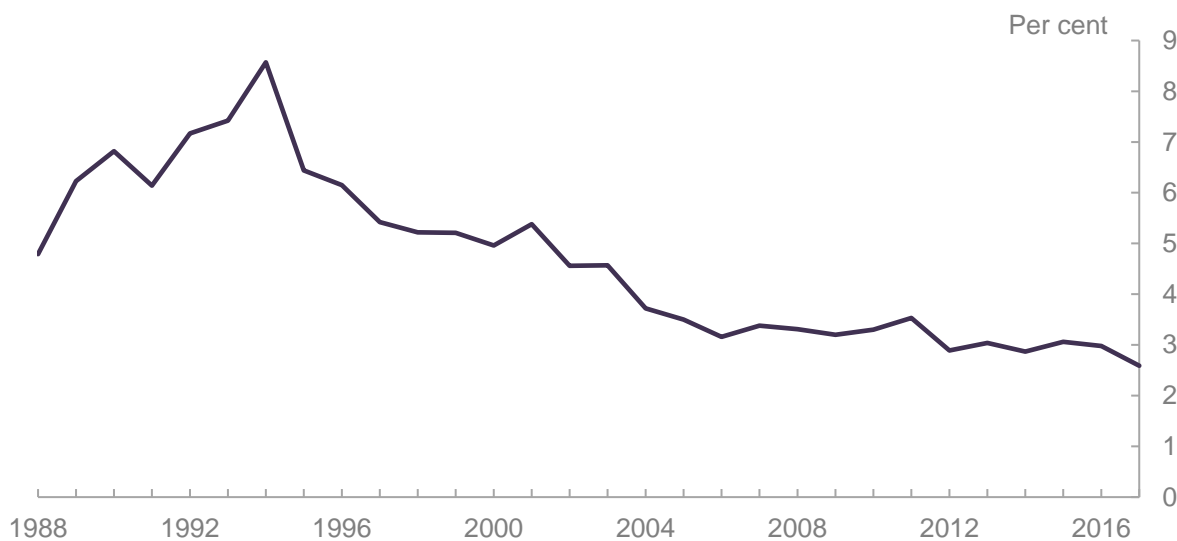


Source: WTO Regional Trade Agreement Database.

²² Some of the observed decline in tariffs is also attributable to the General System of Preferences (GSP) and other unilateral preferential treatment schemes.

²³ Baldwin (2016).

Chart 25: Global tariffs



Source: UNCTAD TRAINS from World Bank WITS.

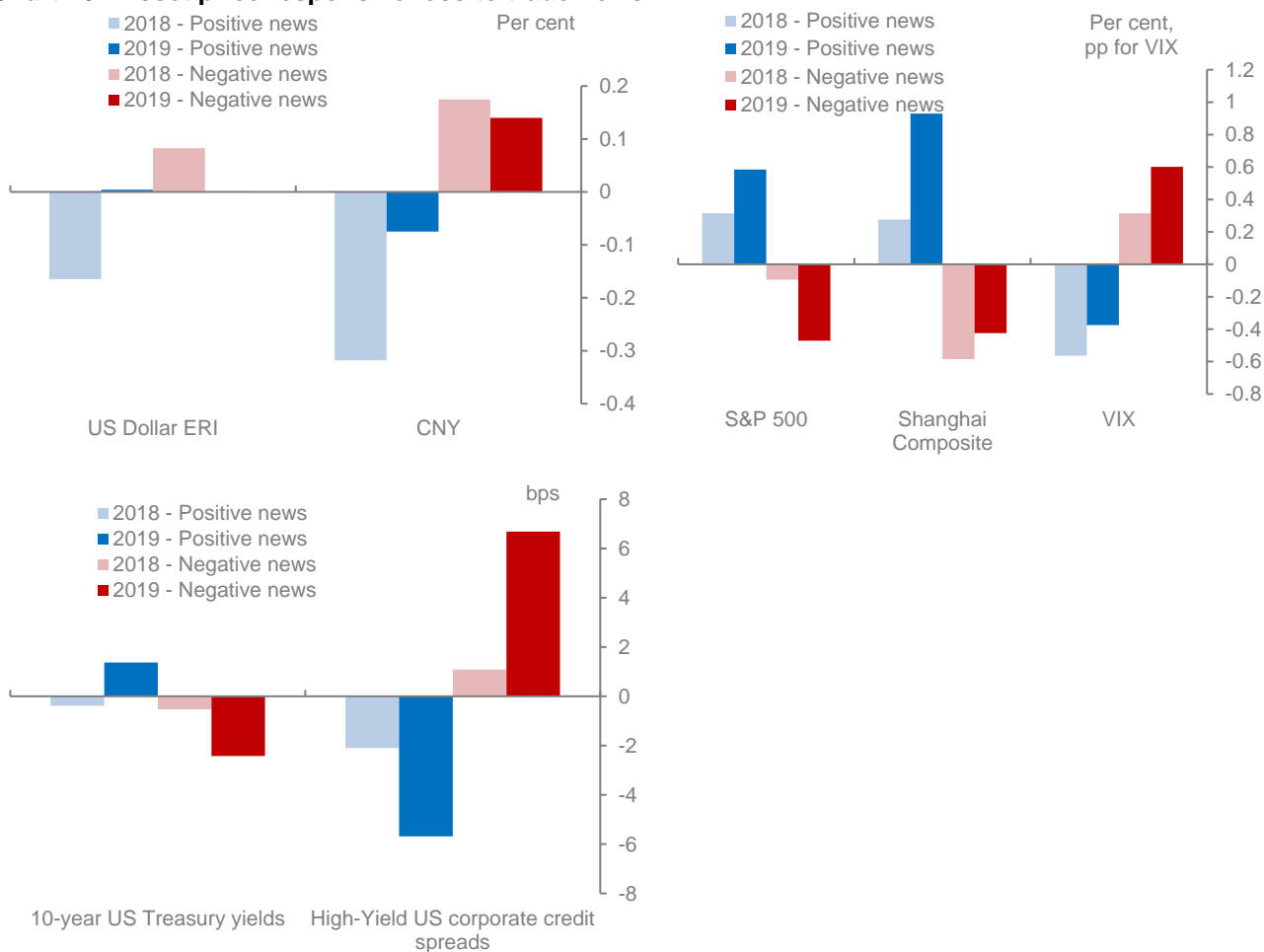
Notes: Weighted global mean of all applied tariffs across all products.

Recently, that tide of cooperation, including on trade, has shown signs of turning – what Mark Carney recently called a “sea change”.²⁴ After a prolonged period of peace, trade wars are now being waged: tariffs have been introduced on over \$200 billion of bilateral goods trade between the US and China; further US-China tariffs are threatened; and there are ongoing trade tensions between the US and Mexico and the US and Europe. These developments are reverberating around global financial markets and among companies.

Among global investors, trade wars have risen to the top of their worry lists. Negative trade news has weighed on global equity and corporate bond prices and government bond yields, as investors have sought safety. Chart 26 shows the responsiveness of a selection of global asset prices to (positive and negative) trade news. Asset prices have been particularly responsive to trade news during 2019.

²⁴ Carney (2019).

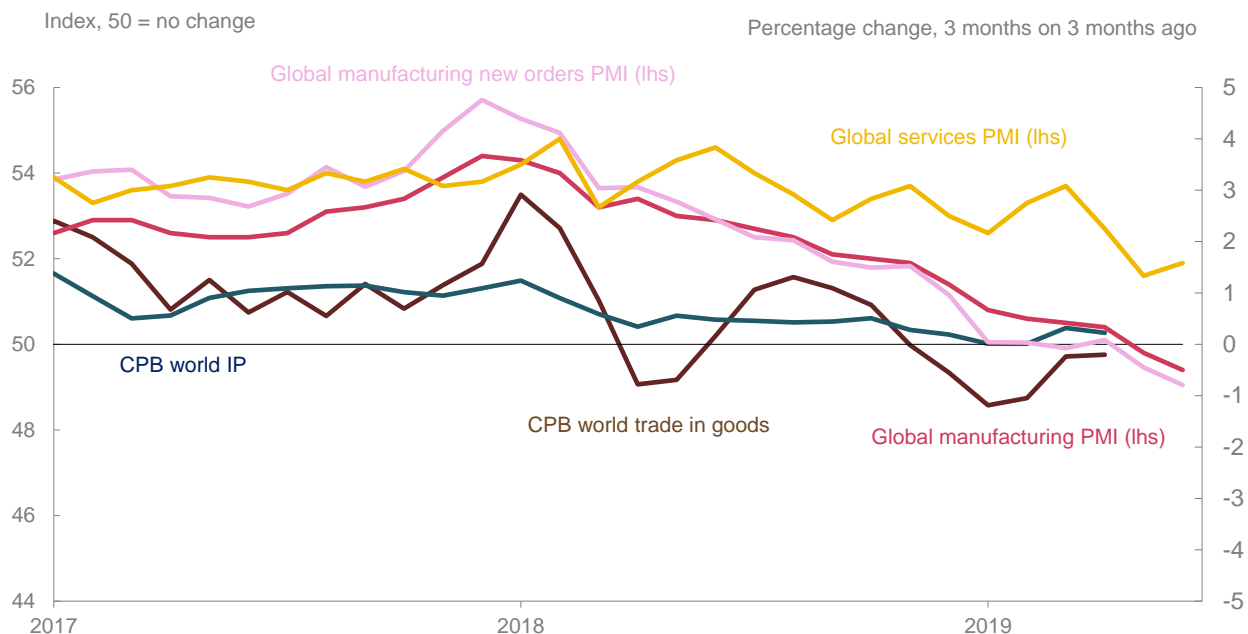
Chart 26: Asset price responsiveness to trade news



Sources: Bloomberg LP and Bank of England calculations.

Trade tensions are also taking their toll on companies' sentiment and activity. Global goods trade has slowed (Chart 27). But the weakening has been even more striking in business surveys of sentiment, manufacturing and export orders. This weakening has been broadly-based across the world's major trading economies, with simultaneous falls in sentiment across the United States, Asia, Europe and China.

Chart 27: Global activity indicators



Sources: IHS Markit, CPB and Bank of England calculations.

It is notable that movements in global asset prices and companies' expectations appear to have been large relative to the modest announced tariff increases. Based on the higher trade tariffs announced so far, and using standard trade models, we would expect a negative impact on global growth of a few tens of basis points.²⁵ The adjustments in asset prices and business survey responses have been multiples of that.

One way of beginning to make sense of this puzzle comes from casting our minds back a decade. Back then, we also saw outsized responses in global asset and output markets following a modestly-sized shock – a collapse in the US sub-prime market which at the time accounted for less than 1% of global wealth. This market's collapse prompted the sharpest fall in global output and asset prices since the 1930s. We now have a much better sense of why: closely inter-connected global markets, once disrupted by deep uncertainty, can cause contagious collapses in confidence, output and asset prices as participants take precautionary action through fight or flight.²⁶ This is the economics of infectious diseases. The stronger the connections, and the greater the uncertainty about them, the larger the potential scale of the epidemic.

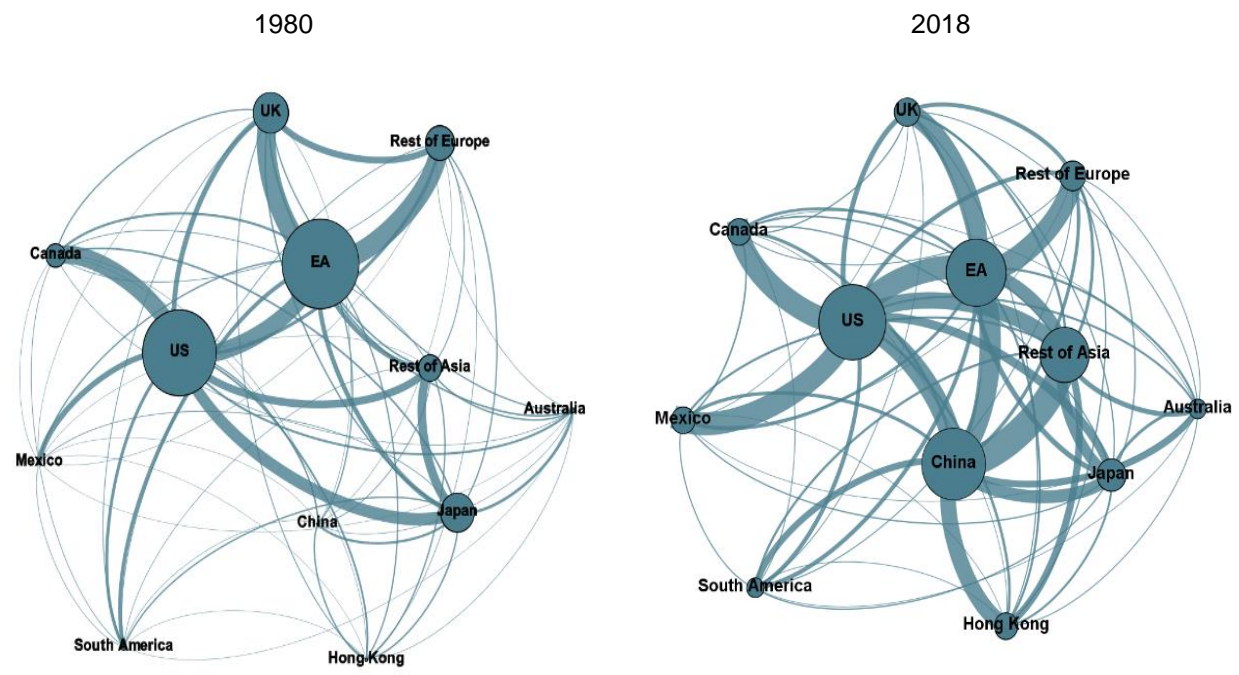
A version of this contagion problem may be operating now. The network is the world trading system and global supply chains rather than global interbank and security markets. And the uncertainty surrounds import tariffs rather than sub-prime defaults. But the same precautionary responses, whether fight or flight, appears to be in play, causing out-sized responses in asset prices and activity.

²⁵ Carney (2019).

²⁶ Haldane and May (2011), Allen and Gale (2000) and Watts (2002).

Chart 28 plots the global trade network on two dates – 1980 and 2018. The wiring of the global trading system has become conspicuously more dense over that period, with the ratio of trade to GDP increasing by 50%. This increased connectivity in the world trading system has generated huge benefits. But that same connectivity has also increased the system’s potential to transmit recent fear and loathing, as uncertainties have clouded its future.

Chart 28: Global trade network in 1980 and 2018

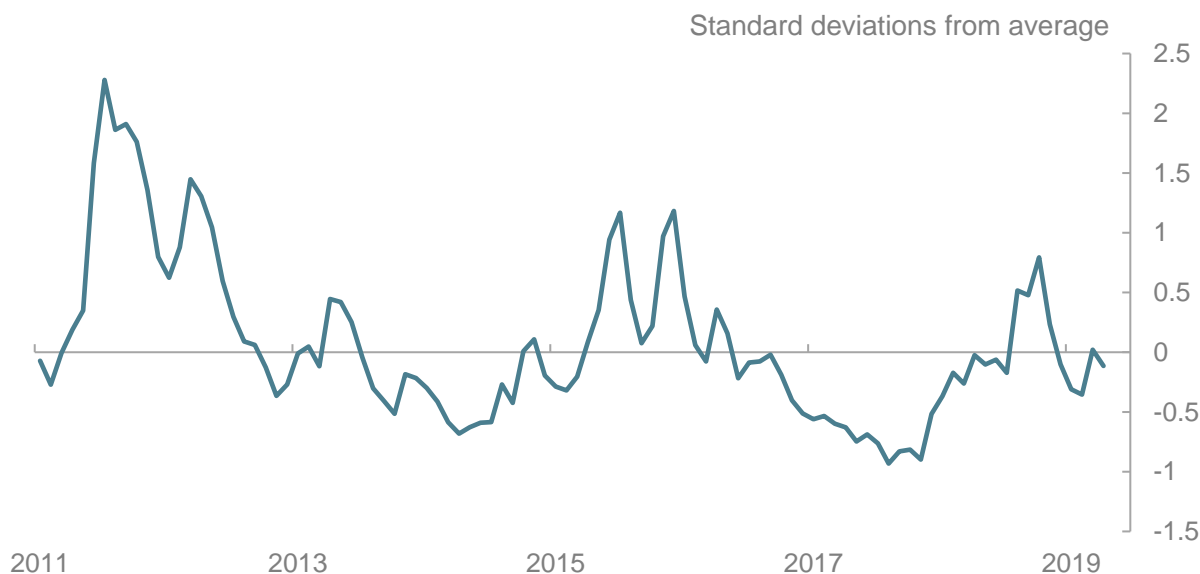


Sources: IMF Direction of Trade Statistics and Bank of England calculations.
 Notes: Line thickness is proportional to total goods trade between regions. Circle size is proportional to regions’ total goods trade with the other regions shown in the chart. Data based on nominal US dollars.

These concerns about global trade, output and asset prices have had significant knock-on effects to global financial conditions. Expectations of short-term interest rates in the major advanced economies have fallen by around 60 basis points, and global bond yields by around 70 basis points, since the start of the year.²⁷ This leaves global financial conditions 0.9 standard deviations looser than at the end of last year (Chart 29).

²⁷ Global taken as simple average of UK, US and euro-area 3-year and 10-year forward rates, respectively.

Chart 29: Global financial conditions index



Sources: Bloomberg Finance L.P., Eikon by Refinitiv and Bank calculations.

Notes: Financial conditions indices (FCIs) estimated for 43 economies using principal component analysis. The FCIs summarise information from the following financial series: term spreads, interbank spreads, corporate spreads, sovereign spreads, long-term interest rates, equity price returns, equity return volatility and relative financial market capitalisation. An increase in the index indicates a tightening in conditions. Series shows the average of all country FCIs, weighted according to their shares in world GDP using the IMF's purchasing power parity (PPP) weights.

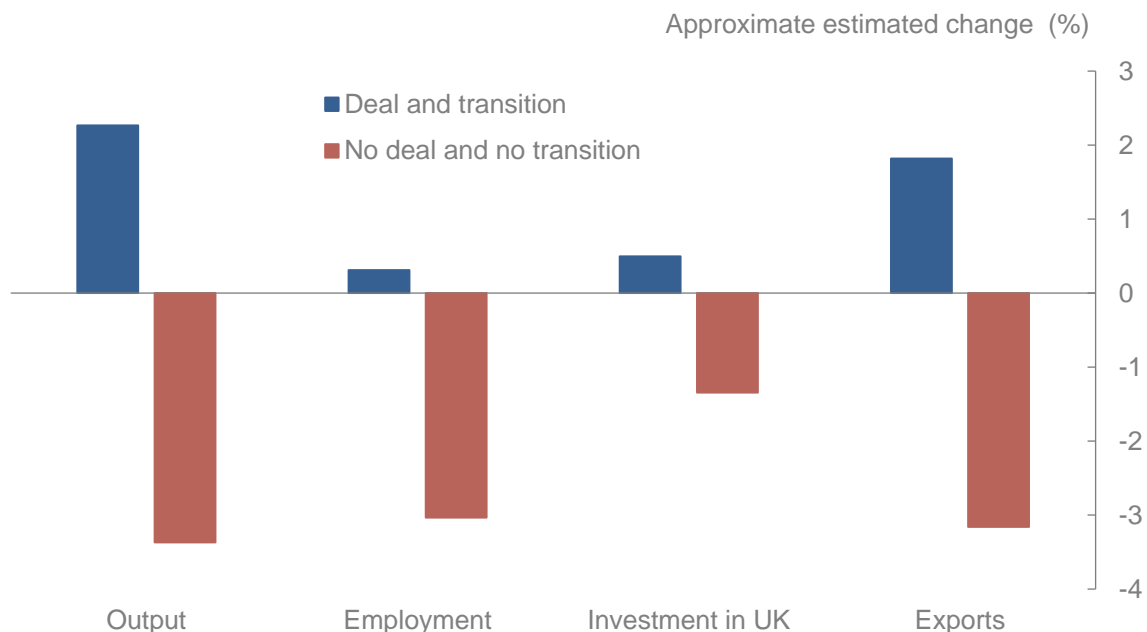
The UK economy has also been facing high and rising degrees of uncertainty about future trade, though the source has been different – Brexit. According to our Decision Maker Panel, the number of companies reporting Brexit as among their top three risks have risen from one-third in April 2018 to around 50% now. Most recently, the perceived risk of a “no deal” Brexit has risen, with betting odds placing a roughly 30% probability on that event, double the probability earlier this year.

With no precedent, it is very difficult to gauge the economic impact of a “no-deal” Brexit. One simple way of doing so is simply to ask companies how they think it would affect them. This is something the Bank's regional Agents have been doing since late-2018. Chart 30 shows companies' expected responses for output, employment, investment and exports under “no deal/no transition” and “deal with transition” scenarios using the combined results of four surveys from December 2018 to April 2019.²⁸

The expected responses to a “no deal” are negative, significantly so. Output is expected on average to fall by 3 ½%, employment by 3% and investment by 1 ¼%. By contrast, expected responses to a deal scenario are all positive. Looking at the different waves of the survey, the good news is the expected negative effects of “no deal” were somewhat smaller in the later waves compared to the first in December 2018. That likely reflects the significant increase in Brexit planning and preparation, by companies and the government, over that period.

²⁸ Companies' responses are translated to impacts using the assumptions described under Chart 30.

Chart 30: Bank of England Agents' Survey of impact of different Brexit scenarios



Sources: Bank of England and Bank calculations.

Notes: Chart shows aggregated results from surveys from December 2018 to April 2019.

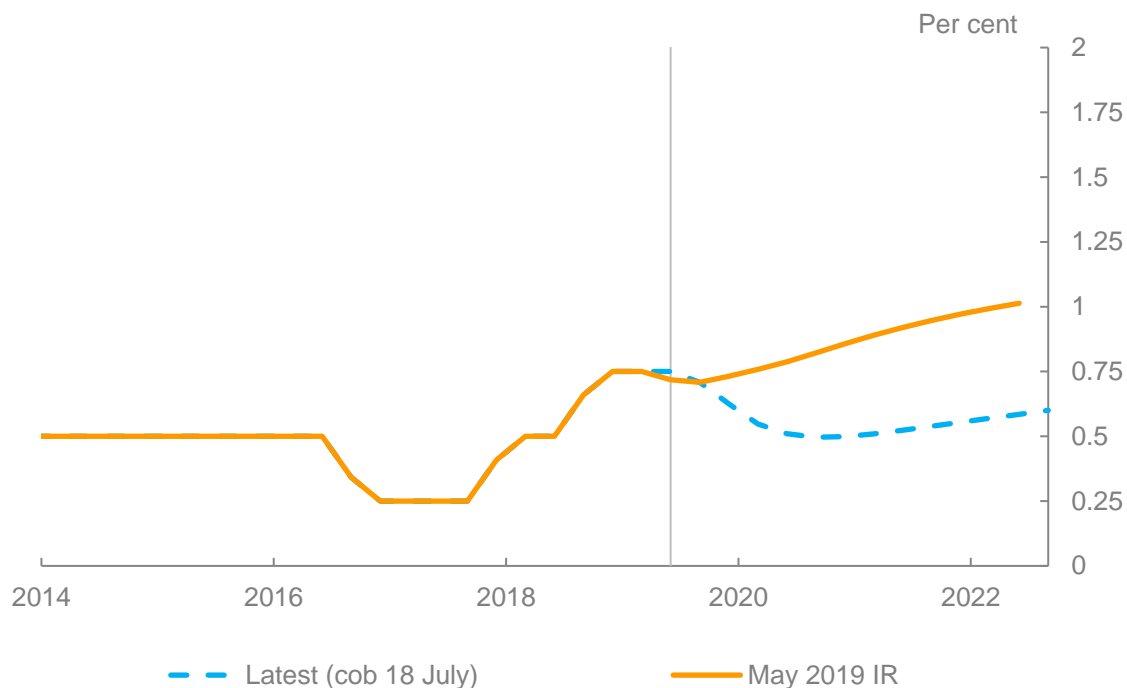
Companies were asked 'Relative to the last 12 months, what is the likely impact on the following for your business over the next year in each scenario: a deal and transition period and no deal and no transition period?' For each relevant business factor, respondents were asked to choose between 'Fall greater than 10%'; '-10 to -2%'; 'Little change'; '+2 to +10%' and 'Rise greater than 10%'.

Responses weighted by employment. Half weight was given to the +/- 2-10% response and full weight was given to those that responded 'Rise/fall greater than 10%'.

The approximate estimated change for output, employment, investment and exports are based on a simple calculation assuming a mid-point figure for each of the response categories. For "Fall greater than 10%" the mid-point was -15%; for "-10 to -2%" the mid-point was -6%; for "Little change" the mid-point was 0%; for "2 to 10%" the mid-point was +6%; for "Rise greater than 10%" the mid-point was +15%.

The likely accuracy of these expected responses is extremely unclear. But "no deal" expectations are already affecting financial markets. As the perceived probability of a "no deal" Brexit has risen, sterling has weakened and UK short-term interest rates have shifted downward (Chart 31). Having expected rates to rise modestly at the time of the May *Inflation Report*, financial markets now expect UK interest rates to fall over the next year or so, before rising gradually.

Chart 31: UK short rates



Sources: Bloomberg LP and Bank calculations.

Notes: May 2019 IR line refers to 15-day average curve used to condition the May Inflation Report projections.

This forward path of interest rates is, in practice, a rather peculiar one. It is likely to reflect a probability-weighted mix of two quite different possible outcomes for the economy – a “deal” scenario in which the economy grows and a “no deal” scenario in which some expect it could shrink. In that sense, the market path of interest rates is not an accurate reflection of the most likely path of interest rates.

To illustrate, consider a simple thought-experiment. Assume, in the event of a “no-deal”, the economy followed the course expected by companies in Chart 30. Assume also, in that event, that monetary policy followed a simple Taylor Rule and that inflation was unaffected.²⁹ These are clearly very stylised assumptions. Nonetheless, on those assumptions, a Taylor Rule would suggest interest rates would need to be cut sharply to their zero bound, to cushion the hit to growth.

If we do the same thought-experiment under the “deal” scenario, again using a simple Taylor Rule, we get instead an upwards-sloped trajectory for expected interest rates, on average 25-50 basis points higher than the slightly upward-sloped market path for interest rates prevailing in May. Clearly, these are two very different interest rate trajectories, reflecting two quite different Brexit economic outcomes.³⁰

²⁹ In the event of a ‘deal’, upward pressure on demand would also likely be accompanied with a stronger exchange rate, so the ex-ante impact on inflation is ambiguous.

³⁰ My MPC colleague, Jan Vlieghe, made a similar point in his recent speech (Vlieghe (2019)).

The market-implied path for interest rates is a probability-weighted mix of these two paths. With a 30% probability of “no deal”, this expected path would have interest rates falling in the near term before rising gently thereafter. Despite our scenarios being highly stylised and simplified, this expected path broadly mirrors the current market yield curve.

In practice, as the MPC has emphasised, the *actual* path of interest rates in the event of either Brexit outcome would never be automatic; it will depend on the response of demand, supply and the exchange rate to these outcomes. This is impossible to predict in advance. If a “no deal” were to lead to a sharp fall in sterling and a sharp rise in inflation expectations, it is not clear the MPC could cut interest rates, as the market expects, if it was to meet its inflation mandate. The risks to rates in a “no deal” scenario are in that sense two-sided, if not necessarily symmetric.

This bi-polarity in possible economic outcomes poses a dilemma for UK monetary policy. Monetary policymakers are often cast as one-club golfers. In the current conjuncture, the problem is more that the MPC does not know which of two quite different fairways it should be aiming at. Brexit uncertainty is not, by itself, a reason for leaving interest rates on hold, as the two tightenings in monetary policy by the MPC since the Brexit referendum demonstrate. Nonetheless, with the economic road ahead potentially forking, the case for holding rates until the road becomes clearer is strong.

With Brexit uncertainty high, the global economy softening and other major central banks expected to loosen monetary policy, it is not difficult to see why short-term interest rates have fallen and are now pricing a near-term loosening of UK monetary policy. UK growth is expected to stall in the second quarter. Companies’ investment remains strikingly and significantly subdued. Business sentiment is weak. And UK growth for the year as a whole, at less than 1.5%, is expected to lie below potential.

My personal view, though, is that I would be very cautious about considering a monetary policy loosening, barring some sharp economic downturn.

First, despite some Brexit-related volatility quarter-to-quarter, underlying UK growth remains fairly steady, if not spectacular, at a fraction below its cruising altitude. Consumer confidence and spending remain robust, underpinned by a still-strong jobs market and rising real pay. The UK housing market may be bottoming-out. When British consumers have more money in their pockets, it takes a lot to persuade them not to spend it. Nothing so far has dissuaded them. And they are three-quarters of all spending in the economy.

Second, the starting position for both the economy and monetary policy need importantly to be borne in mind. As best we can tell, there is little, if any, slack left in the UK economy. That is why pay is picking up at pace. UK inflation, meanwhile, is already at target and the monetary stance remains accommodative, with short-term real interest rates still negative, augmented by almost £½ trillion of asset purchases.

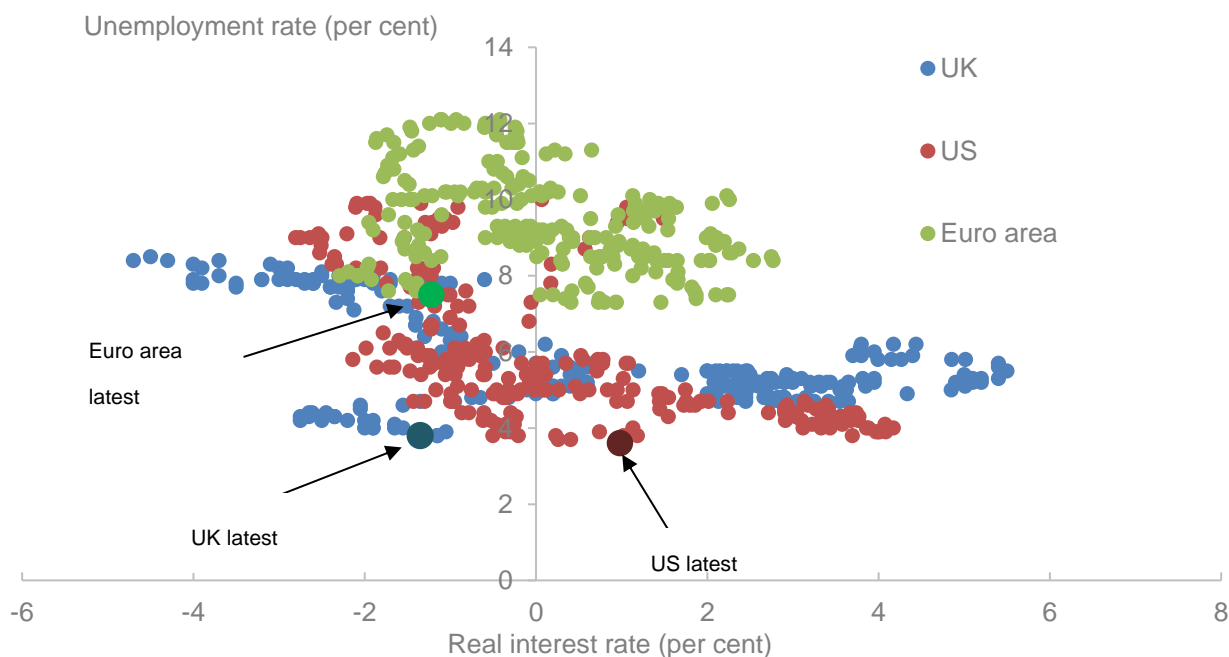
Third, there is sometimes a tendency in the current environment to extrapolate from international experience, or recent historical experience, to the current stance of UK monetary policy. That is dangerous when the starting point for the UK economy, and the shocks to which it is potentially subject to, are very different to our overseas counterparts or indeed the UK's own recent past.

Since the start of the year, UK short-term interest rates have moved in lockstep with those in the major economies, notably the US and the euro area. The correlation of daily changes between them has been around 0.7, a little above its historical average. Common exposures to a slowing global trade cycle can explain some, if not all, of this correlation. But what stands out, for me, are the differences as much as the similarities between the UK, US and euro-area economies.

Chart 32 is a simple plot of unemployment against short-term real interest rates in the UK, US and euro area over the past 20 years. You might expect a negative relationship between the two: the lower unemployment, the smaller slack in the economy and the higher the level of real interest rates necessary to prevent inflation rising. This is broadly what you see in the data.

Also shown in the chart are the current settings for the UK, US and euro area (the darker dots). The US has low levels of unemployment and, courtesy of a progressive tightening of policy over recent years, a now-positive – if still low – real interest rate. The euro area is in the opposite place, with a higher level of unemployment and a still-negative short-term real rate.

Chart 32: Real interest rates and unemployment (1999 – latest)



Sources: Thomson Reuters Datastream, ONS and Bank of England calculations.

Notes: Real interest rates defined in simple terms as current short-term central bank policy rate minus headline CPI inflation rate.

The UK occupies an unusual, mid-Atlantic position. It has similar levels of real interest rates to those in the euro area, at the same as having similar levels of unemployment to those in the US. Put differently, relative to both the US and the euro area, and its historical past, the current UK monetary stance looks relatively accommodative. For the same output gap and a higher rate of inflation, the UK's monetary stance is 2 percentage points looser than in the US.

There may well be good grounds for these international differences – for example, differing levels of neutral real rates and different natural unemployment rates. Nonetheless, the very different starting positions of the economy and monetary policy should give us cause to pause before simply assuming central banks should be moving synchronously, even when faced by a common global shock.

One reason why financial markets might be over-extrapolating international experience is because, at least since the crisis, monetary policy internationally has borne most of the burden of supporting growth in advanced economies. Over that period, central banks have often been “the only game in town”.³¹

I believe that game made economic sense. The crisis led to a large gap opening-up between aggregate demand and supply in the economy. Pump-priming aggregate demand back towards aggregate supply, through accommodative monetary policy, was the right policy response. And this monetary medicine, as best we can tell, worked. In the UK and US, aggregate demand is now back in line with supply. And in the euro area and Japan, the output gap has shrunk materially.

Today, however, the conjunctural starting position for most advanced economies is very different than a decade ago. With the output gap closed in the UK, economic growth and pay rises in future can no longer rely on monetary policy pump-priming demand. It will instead require a lasting expansion in the economy's supply potential, if capacity constraints are not to bite and inflationary pressures are not to snuff out pay rises.

It is not just the economic starting point that differs, now versus a decade ago. So too do the potential shocks. A decade ago, the world faced a sharp shock to aggregate demand courtesy of the global financial crisis. This opened-up yawning output gaps and fed fears of the scourge of 1930s-style mass unemployment returning. Monetary policy responded with a force never previously seen in history.

Today, the most likely shocks or downside risks to the economy are very different in their source and impact. They arise from factors such as global trade wars and Brexit. These shocks are different in their duration – more slow-burn than spontaneous conflagration. And they are radically different in their source, as they hit the supply potential of the economy, as much as its demand side.

³¹ El-Erian (2016).

Consider the effects of Brexit uncertainty on the UK economy. By far the largest effects have been on companies' investment and productivity. According to our Decision Maker Panel, investment among UK companies is estimated to be between 6-14% lower, and firms' Total Factor Productivity (TFP) around 2-5% lower.³² These are large negative shocks to the economy's supply-side potential. They are hits that monetary policy is not itself well-placed to mitigate.

There is a risk of people normalising the deviance in monetary policy since the crisis. Around a quarter of adults in the UK working population have never experienced Bank Rate above 1% in their adult lives.³³ In these changed circumstances compared with a decade ago, it is important that monetary policy is not a prisoner of its past, that the monetary cavalry are not called at the first whiff of grapeshot, that a dependency culture around monetary policy is not allowed to develop.

A decade ago, central banks were the only game in town and monetary medicine was the right prescription. A decade on, the game has changed and so too might the policy prescription needed in dealing with any downturn. When the challenges, as well as the huge opportunities, lie on the supply-side of the economy, the right medical prescription is fiscal and structural policies. Super-charging the supply-side of the economy is what is now needed. That is every bit as true here in Scunthorpe as it is elsewhere across the UK.

³² See <https://decisionmakerpanel.co.uk/> and Bloom et al (2017) for information about the DMP dataset.

³³ Economically active individuals aged 16-30 as a share of economically active population.

References

- Abel, W, Tenreyro, S and Thwaites, G (2018)**, 'Monopsony in the UK', 10 October 2018, available online.
- Allen, F and Gale, D (2000)**, "Financial Contagion", *Journal of Political Economy*, Vol. 108, No. 1, pp. 1- 33.
- Autor, D (2014)**, 'Education, and the Rise of Earnings Inequality Among the "Other 99 Percent"', *Science*, 23 May 2014, pp. 843-851.
- Autor, D (2017)**, 'Economic and political consequences of China's rise for the United States: lessons from the China shock', *IFS Annual Lecture 2017*, 22 June 2017.
- Baldwin, R (2016)**, *The Great Convergence: Information Technology and the New Globalization*, Harvard University Press.
- Bernard, A, Van Beveren, I and Vandebussche, H (2014)**, 'Multi-product exporters and the margins of trade', *The Japanese Economic Review*, Vol. 65, No. 2, pp. 142-157.
- Bloom, N, Bunn, P, Mizen, P, Smietanka, P, Thwaites, G and Young, G (2017)**, 'Tracking the views of British businesses: evidence from the Decision Maker Panel', *Bank of England Quarterly Bulletin*, 2017 Q2.
- Broadbent, B (2017)**, 'Brexit and interest rates', speech available at:
<https://www.bankofengland.co.uk/speech/2017/ben-broadbent-speech-at-london-school-of-economics>
- Carney, M (2019)**, 'Sea Change', speech available at:
<https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-bournemouth-regional-visit>
- Clarke, S (2017)**, 'The Get a Move on? The decline in regional job-to-job moves and its impact on productivity and pay', *Resolution Foundation*.
- Datta, N, Giupponi, G and Machin, S (2018)**, 'Zero Hours Contracts and Labour Market Policy', paper for the 68th *Economic Policy Panel Meeting*, Vienna, 4-5 October 2018.
- El-Erian, M (2016)**, *The Only Game in Town: Central Banks, Instability, and Avoiding the Next Collapse*, Penguin Random House.
- Haldane, A (2018)**, 'Ideas and Institutions', speech available at:
<https://www.bankofengland.co.uk/speech/2018/andy-haldane-speech-given-at-the-oxford-guild-society>
- Haldane, A and May, R (2011)**, 'Systemic risk in banking ecosystems', *Nature*, Vol. 469, pp. 351-355.
- Mas, A and Pallais, A (2017)**, 'Valuing Alternative Work Arrangements', *American Economic Review*, Vol. 107, No. 2, pp. 3722-3759.
- Melosi, L and Faccini, R (2019)**, 'Bad Jobs and Low Inflation', *CEPR Discussion Paper Series*, DP13628.
- Moscarini, G and Postel-Vinay (2016)**, 'Wage Posting and Business Cycles', *American Economic Review*, Vol. 106, No. 5, pp. 208-213.
- Moscarini, G and Postel-Vinay (2018)**, 'The Cyclical Job Ladder', *Annual Review of Economics*, Vol. 10, pp. 165-188.
- Phillips, AW (1958)**, 'The Relationship between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957', *Economica*, Vol. 25, pp. 283-99.
- Pissarides, C (2000)**, *Equilibrium Unemployment Theory*, MIT Press.
- Taylor, M (2017)**, 'Good work: the Taylor review of modern working practices', report published on 11 July 2017.

Tomlinson, D (2018), 'Irregular payments: Assessing the breadth and depth of month to month earnings volatility', *Resolution Foundation*, October 2018.

Vlieghe, G (2019), 'Continuous Improvements in Communicating Monetary Policy', speech available at <https://www.bankofengland.co.uk/speech/2019/gertjan-vlieghe-thomson-reuters>

Wales, P, Black, R, Dolby, T and Awano, G (2018), 'UK trade in goods and productivity: New findings', *ESCoE Discussion Paper*, July 2018.

Watts, D (2002), 'A simple model of global cascades on random networks', *Proceedings of the National Academy of Sciences*, Vol. 9, pp. 5766-5771.