

ISSN 1362-3761

Centre Piece

The Magazine of Economic Performance Volume 4 Issue 1 Spring 1999 £4.00



A Levels

GETTING THE BALANCE RIGHT

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Printed by: Warwick Printing Company
Photography: Karl Fulton

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Houghton Street
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Annual subscriptions for one year (3 issues):
Individuals £11.00
Students £7.00
Organisations (UK and Europe) £25.00
Rest of world £32.00 or US \$50.00
Visa and Mastercard accepted
Cheques payable to *London School of Economics*

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Volume 4 Issue 1
(ISSN 1362-3761) All rights reserved.

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Editor's note

This issue marks the start of CentrePiece's fourth year. As usual, the magazine is packed with topical, sometimes controversial material: one indication of the industriousness and diversity of the members of the Centre for Economic Performance whose work underpins CentrePiece.

Our cover story (page 8) challenges those who argue that British A level students need to widen their range of study: Anna Vignoles says employers and universities seem to prefer specialisation at A level. What employers want, above all, though is mathematics: the higher salaries commanded by those with maths A level is a clear signal that schools should do more to encourage their students in this direction.

In this issue, we also revisit two subjects CentrePiece has looked at in the past. In the first of a new series on research in progress at the CEP, Sue Fernie looks at industrial relations in the service sector including that part of the service sector she has made her own - telephone call centres. And David Metcalf, a member of the Low Pay Commission, looks forward to the introduction of the minimum wage by focussing on those who will benefit most - low-paid workers in the service sector, where there is evidence that employers have started gearing up for the big change that April will bring.

As we go to press there is much anticipation about the Bank of England's scope for action on interest rates over the coming months. Instead of trying to second guess the experts, Charles Bean looks at the difficulties involved in assessing how well the Bank's Monetary Policy Committee has been doing its job - and suggests that there are some useful lessons in the British experience for the new European Central Bank.

Printing deadlines caused problems for another of our contributors: in our Guest Column, Kate Barker, Chief Economist of the CBI, tries to assess what last year's global upheavals mean for the UK economy. Her problem has been what to say about this year's global upheavals! The year got off to an unexpectedly bumpy start, with the implications for the world economy of the Brazilian crisis still far from clear.

We are pleased to welcome two more outsiders: Timothy Besley and Robin Burgess both from the CEP's neighbour, STICERD. They too offer a challenge, to all those who like to insist that inequality is the price to be paid for national economic success. Think again, say Besley and Burgess.

Last, but not least, is our resident weightless economist Danny Quah who writes about the importance of intellectual property in his regular column.

Many thanks to those of you who took the trouble to complete our readers' survey. Winners of the prize draw are listed on the inside of the cover.

Graham Ingham

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Holding the Bank to account

In May 1997, the new Labour Chancellor, Gordon Brown, took everyone by surprise when, within days of taking office, he announced that he was to hand over responsibility for setting interest rates to the Bank of England. But who decides whether the Bank is doing a good job? The CEP's Charles Bean, who is specialist adviser on monetary policy to the Treasury Select Committee of the House of Commons, looks at the difficulty of measuring the Bank's performance – and offers his own judgement.

With most people still reeling from the Chancellor's shock tactics, he moved swiftly to implement his newly-announced policy. A new, nine-member Monetary Policy Committee was established at the Bank: it comprises a mix of old Bank hands and a group of outsiders, some of whom are part-time. It is they, meeting once a month, who decide whether interest rates should go up, down or stay the same. Their deliberations (published two weeks after the event) and their decisions are both closely studied by market operators and commentators who are constantly seeking clues about the future direction of policy. The MPC decisions – raising interest rates gradually in 1997 and then lowering them in late 1998 (and early 1999) – have been controversial; and have focused attention on the issue of accountability: who decides whether the Bank is doing a good job?

The new regime



The new arrangements are enshrined in the Bank of England Act which follows the wording of the Maastricht Treaty in mandating the Bank to pursue an objective of price stability and, without prejudice to that objective, to support the general economic policies of the government, including those with respect to growth and employment. An annual remit from the Chancellor of the Exchequer then gives a precise form to the definition of price stability, presently a target for the annual growth rate of the Retail Prices Index (excluding mortgage interest payments) of 2.5%, although over an unspecified time horizon.

If the annual inflation rate deviates more than 1% point either side of the 2.5% target, then the Governor of the Bank of England is expected to write an Open Letter to the

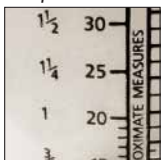


Chancellor explaining the reasons for the divergence from the target, what actions the Monetary Policy Committee (MPC) is taking to bring inflation back to target, and how long the divergence is expected to last; subsequent letters will be sent quarterly until inflation is within 1% point of the target. The associated 1.5%-3.5% band is explicitly not intended as a target range, but rather as defining the points at which this Open Letter is triggered.

This new regime is supposed to preclude the manipulation of interest rates for short-term political advantage. But the flip side of delegation of this powerful weapon of economic policy to a nominated, rather than elected, body is a need to ensure that the Bank and the MPC can be held to account for their actions. Accountability is achieved through a variety of channels. First, through a reformed Court of the Bank of England (the Bank's governing body): this is charged with ensuring that the MPC operates in an efficient manner, taking full account of available sources of information and so on. Second, there is accountability to the Chancellor, through the aforementioned Open Letter, although clearly this only operates when such an Open Letter is triggered. Third come parliamentary committees who hold regular hearings to take testimony from MPC members. The main player here has so far been the Commons Treasury Select Committee but this is set to be complemented by a similar House of Lords Committee that includes some pretty heavyweight names in British economics. In many ways this is the most visible channel of accountability since such meetings are both public and sometimes televised.

Finally, the Bank is accountable in a rather more diffuse way via press and media commentary, as well as expert evaluation by outside economists in the City, business and academia. Unfortunately some of the press and media commentary has initially concentrated rather too much on the backgrounds and personalities of those on the MPC rather than the quality of their decisions, but maybe that will improve with time!

Ex post accountability



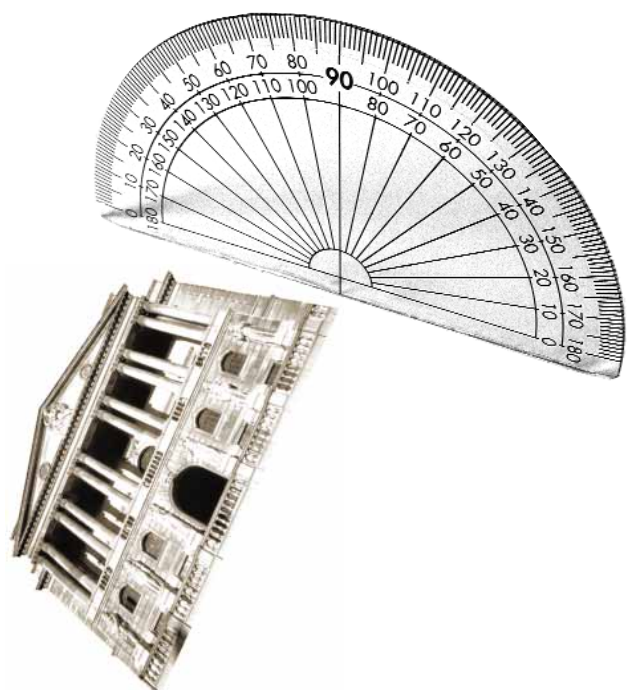
So much for the mechanisms of accountability. But what should the Bank be held accountable for? This might seem a rather trivial question, since it has been given a numerical target for the inflation rate of a specific price index. Surely one can just check whether they have achieved what they were asked to achieve? In fact such *ex post* accountability is not as straightforward as it might seem.

First, because monetary policy operates with long and somewhat variable lags, and economic forecasts are inevitably fallible, the inflation target of 2.5% will be hit only by chance. More usually, shocks and unavoidable control errors will mean that inflation outturns are lower or higher

than the target. If the MPC took the best decisions it could have done, given the information that was available to it at the time, then it would be unfair to censure it for missing the target – that would be like sacking Sir Richard Greenbury, Chairman of Marks and Spencer, simply because M&S's profits turned down in a general recession. The shareholders of M&S can get round this problem by benchmarking the performance of M&S's management against that of its competitors. In the monetary policy sphere, such benchmarks are provided by the forecasts of outside bodies and analysts. So censure would be in order if the MPC raised rates when commentators outside thought it unnecessary, and inflation a couple of years down the road undershot the target; but if those outsiders had supported its actions then it would be unreasonable to hold the MPC responsible for the subsequent undershoot.

The fact that the inflation target will not be hit exactly is recognised explicitly in the annual letter from the Chancellor to the Governor. But over longish periods of time episodes of overshoot ought to be roughly matched by periods of undershoot so that inflation should average 2.5% over a reasonable time period if the MPC is doing its job. So perhaps this provides another way to measure the perfor-

The flip side of delegation of this powerful weapon of economic policy to a nominated, rather than elected, body is a need to ensure that the Bank and the MPC can be held to account for their actions.





mance of the MPC? Unfortunately this is on the one hand not very practical, and on the other insufficiently demanding. It is not very practical for the simple reason that one needs a decade or more to apply the '2.5% on average' test, by which time most members of the MPC will have retired to their villas in the country. It is not very demanding for the reason that '2.5% on average' could be consistent with excessively volatile growth and inflation from one year to the next. One therefore needs to know not only whether the inflation target is being achieved on average, but also whether it is being achieved in the right manner.

Optimality and efficiency



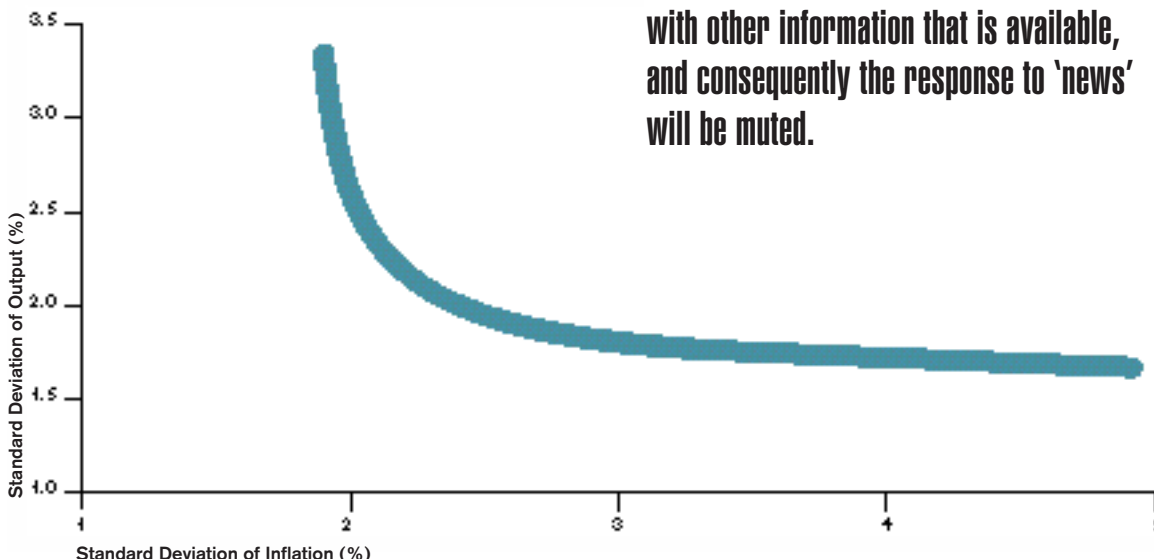
It is a central tenet of macro-economics that one cannot achieve a permanently higher level of activity simply by tolerating a higher inflation rate, for eventually people cotton on to the fact that inflation is higher and mark up wages and prices appropriately. Indeed, if anything, the relationship is likely to go the other way, since high inflation is usually associated with variable and unpredictable inflation which is likely to be harmful for the efficient functioning of the economy. But there is ample evidence to suggest that there is a trade-off between output and inflation in the short run. And because it takes time for interest rates to affect demand, and for demand then to affect inflation, there is not much the MPC can do to affect today's inflation rate. The best they will be able to do is bring inflation back towards target a year or so down the road. Consequently the MPC is faced with a trade-off between the volatility of output and the volatility of inflation. The Figure below illustrates this by plotting a measure of the volatility of both output and inflation against each other. It shows that the MPC could get inflation back

Central banks around the world display a tendency both to move interest rates in small amounts, and to prefer a sequence of small steps in the same direction rather than a single large one.



Wise central bankers will tend to discount new information, particularly when it conflicts with other information that is available, and consequently the response to 'news' will be muted.

Figure 1 The Bank's Policy Frontier





quickly towards target, but only if they are prepared to put up with large fluctuations in output. Alternatively they could smooth output fluctuations, but only by tolerating inflation persistently above or below target.

This volatility trade-off is more strictly a *policy frontier*, as bad policies (ie, those above the curve in the Figure) could lead to both output and inflation being excessively volatile. There are thus two distinct issues here that Parliament, and the public at large, might be concerned about. First, is policy being conducted efficiently, in the sense of being on this frontier? And, second, given that it is being conducted efficiently, is it being conducted optimally, in the sense of getting the balance between stabilising output and stabilising inflation right?

Let's take the second question first. A lot of press and public discussion assumes that the Bank are supposed only to care about inflation, and this has led to calls for output to be explicitly added to the list of objectives. But this assumption is wrong, as we saw at the beginning: the MPC are supposed to foster growth and employment, subject to meeting their inflation target in the medium-term. In fact, the form of the remit is quite an elegant way of capturing the fact that while there may be no long-run output-inflation trade-off, there is a short-run one, and that the MPC thus have a degree of discretion over how quickly to return inflation to target if it has wandered off. Now it might seem to be a problem for accountability that this is not explicitly specified in the remit: if the MPC have not been told what balance to place on output vis-a-vis inflation, how can they be held accountable? In practice this appears not to be a problem, because empirically this frontier seems to be rather sharply curved, as shown in the Figure; furthermore most 'reasonable' weightings of output vis-a-vis inflation should lead the MPC to pick pretty much the same point on this frontier, namely in the region of the 'kink'. In other words there is not much ambiguity about the speed at which inflation should be brought back to target; the numbers actually imply that the MPC should aim to eliminate roughly half of any expected divergence of inflation from target within about a year to eighteen months.¹

Getting it right



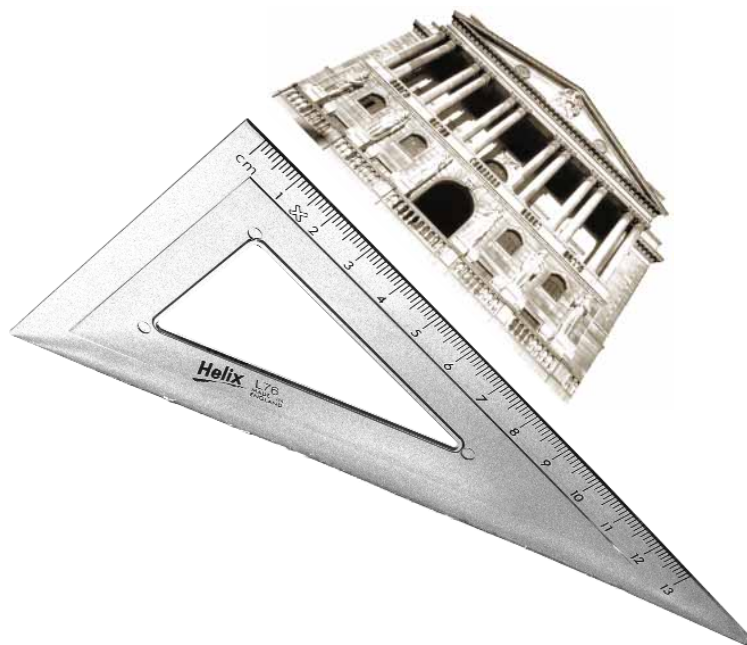
So we come back to the prior question of efficiency, which then revolves around whether the MPC's interest rate strategy is right. Now central banks around the world display a tendency both to move interest rates in small amounts, and to prefer a sequence of small steps in the same direction rather than a single large one. In addition, they show a marked dislike of policy reversals, in the sense that after an increase (or decrease) in interest rates, the next movement in interest rates is usually in the same direction; and that reversals in direction are usually separated by a relatively

long stretch of time.² The MPC has displayed a similar collective tendency to move in small sequential steps³ and to try to avoid early policy reversals.⁴

Theory suggests that short-term interest rates should be close to being a *random walk*, with changes in interest rates being largely a response to 'news' about the economic environment. Since 'news' is necessarily unpredictable, it then follows that roughly half the time an increase in interest rates should be followed by a decrease and vice versa. This is only an approximate result, since if interest rates are above their long-run level (given by the equilibrium real interest rate plus the target rate of inflation, i.e. around 5%), then they must be expected to decline over time. Nevertheless the random walk model provides a useful benchmark against which actual policy appears to deviate significantly.

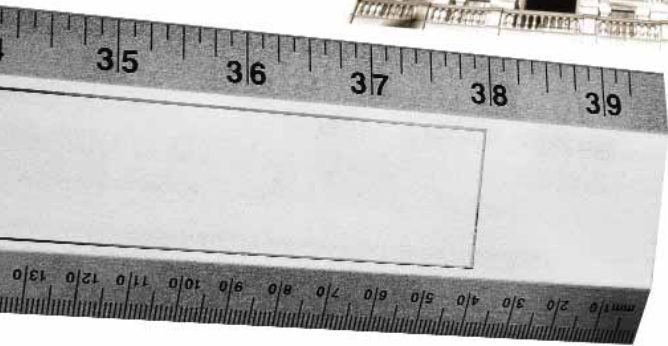
A tendency to move interest rates by only small amounts is quite sensible for two reasons. First, data about the current state of the economy is frequently unreliable and prone to revision – witness the debacle over the earnings figures last year (when the official earnings figures were withdrawn temporarily because of concern about their unreliability).

The contrast with the new European Central Bank (ECB) which is set to follow the relatively secretive Bundesbank model could not be starker.





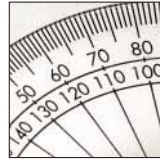
Because it takes time for interest rates to affect demand, and for demand then to affect inflation, there is not much the MPC can do to affect today's inflation rate. The best they will be able to do is bring inflation back towards target a year or so down the road.



Wise central bankers will thus tend to discount new information, particularly when it conflicts with other information that is available, and consequently the response to 'news' will be muted. Second, the effect of interest rate changes on the economy is uncertain. Large movements will tend to increase the uncertainty in the economy, and a more cautious approach is warranted.

Rather harder to rationalise is the tendency to make larger changes in interest rates in a sequence of small steps (note that this is different from the foregoing argument, which simply implies that small rather than large changes are usually the appropriate action), and to try to avoid early policy reversals. Such a strategy makes sense when reversals impose real costs on the economy, but it is difficult to see what these might be. It is clear, though, that there is a presentational problem with policy reversals: commentators are apt to see them as reflecting indecision or incompetence on the part of the MPC. In that case the MPC might be tempted to adopt a 'wait-and-see' attitude. The problem, of course, with this strategy is that it results in monetary policy being 'behind the curve' and thus inefficient. It also means policy makers may not get the credit they deserve because their actions will sometimes appear belated.

Is *ex ante* accountability easier?



Holding the Bank to account *ex post* is not as easy as it may first appear. But the need to benchmark the Bank's views against those of outside forecasters and analysts suggests that a degree of concurrent, or *ex ante*, accountability is also possible. This requires the Bank's thinking about the current conjuncture and economic prospects to be exposed to critical analysis, something that is done in spades by the media and city economists, as well as through the formal parliamentary channels. Transparency in policy formulation is essential for this to be done effectively; this is provided through prompt publication of the minutes of MPC meetings, as well as the quarterly Inflation Report which provides a fuller statistical picture behind MPC decisions. Compared to the information provided by most other central banks, both the minutes and the Inflation Report are generally to be applauded for their openness and frankness. At present there is only one slight weakness, which is in the presentation of the Bank's inflation forecasts. These appear rather out of nowhere, at the end of the Report, with relatively little explanation about the assumptions and judgements that have gone in to them. Consequently it is often difficult for outsiders to make valid comparisons with outside forecasts.

The problem is compounded by the fact that the forecasts are probabilistic – the so-called 'fan charts' – and are centred around the modal, or single most likely, outcome. That they are probabilistic, rather than being just a single number, is a Good Thing, as it emphasises the (considerable) margins of uncertainty associated with economic forecasting, and centring the fan charts around the modal outcome serves to highlight when the risks are skewed in one direction or another. It is inevitable that the eye of the casual reader is attracted to the central, modal forecast as it is the most densely shaded region. But it makes little sense operationally to focus on the modal forecast – that is tantamount to ignoring the presence of risk altogether – and measures like the average, or mean, forecast are more informative. Now these distinctions matter little when the balance of risks are symmetric, but when they are skewed the differences can be significant. Thus the May and August 1998 Reports both had a central forecast with inflation pretty much on target two years down the road, but with a balance of risks to inflation on the upside. In fact the average expected inflation rate two years on was nearly 3% rather 2.5%; if this had been clear to outsiders, it might have helped the MPC justify their decision to raise rates in June 1998.

A second problem with the Bank's forecasts is that they are conditional on an assumption of unchanged interest rates, whereas most outside forecasters will be assuming interest rates will be changed to reflect economic circumstances. Thus outside commentators compared directly the Bank's central forecast for growth of about 1% for



1999 and 2% for 2000 in the November 1998 Inflation Report with the Pre-Budget Treasury forecasts of 1-1.5% and 2-2.5% respectively, concluding the Bank was slightly more pessimistic. Reading between the lines, however, it was clear that the Treasury had some pretty hefty interest rate cuts factored in, so that the Bank was actually more optimistic.

Fortunately, the Bank also usually produces an alternative fan chart conditional on implicit market beliefs about the future path of interest rates rather than assuming current rates are unchanged, which makes comparisons with outside forecasters easier. However, even here difficulties remain, as the fan charts assume the same future level of interest rates whatever happens to output and inflation, whereas presumably if inflation is higher than expected interest rates will be higher, and vice versa. As a consequence the fan chart tends to overstate the degree of uncertainty about future inflation, as countervailing policy actions can be expected if inflation is starting to drift off target; this overstatement of the risks is, of course, equally true of the main inflation fan chart which assumes unchanged interest rates.

Some of the press and media commentary has initially concentrated rather too much on the backgrounds and personalities of those on the MPC rather than the quality of their decisions.



An example in Europe?



But these are relatively small quibbles set against the general openness and transparency of the Inflation Report, and the decision-making process more generally. Measuring the Bank's success may, as we have seen, be difficult: but most of these difficulties go with the territory. The framework now in place at least recognises the problems and tries to overcome them.


The contrast with the new European Central Bank (ECB) which is set to follow the relatively secretive Bundesbank model could not be starker. Those used to that cosy approach have looked on in horror when the arguments and disagreements within the MPC have been ridiculed in the some sections of the British press. But openness, transparency and accountability all help to build legitimacy, something that the ECB is desperately in need of in these early days of the euro. Without this democratic legitimacy, they will too easily find themselves in the role of scapegoat for Euroland's economic ills. Whilst they may not be obliged to expose themselves to scrutiny in the way the Bank of England now is, the Governing Council and Executive Boards of the ECB would be wise to resolve to do so voluntarily. Even though the UK is not joining the euro in the first wave, perhaps we still have something immediately useful to contribute to the success of the project.

Charles Bean is Professor of Economics at the LSE and a member of the CEP's Growth and Technology research programme.

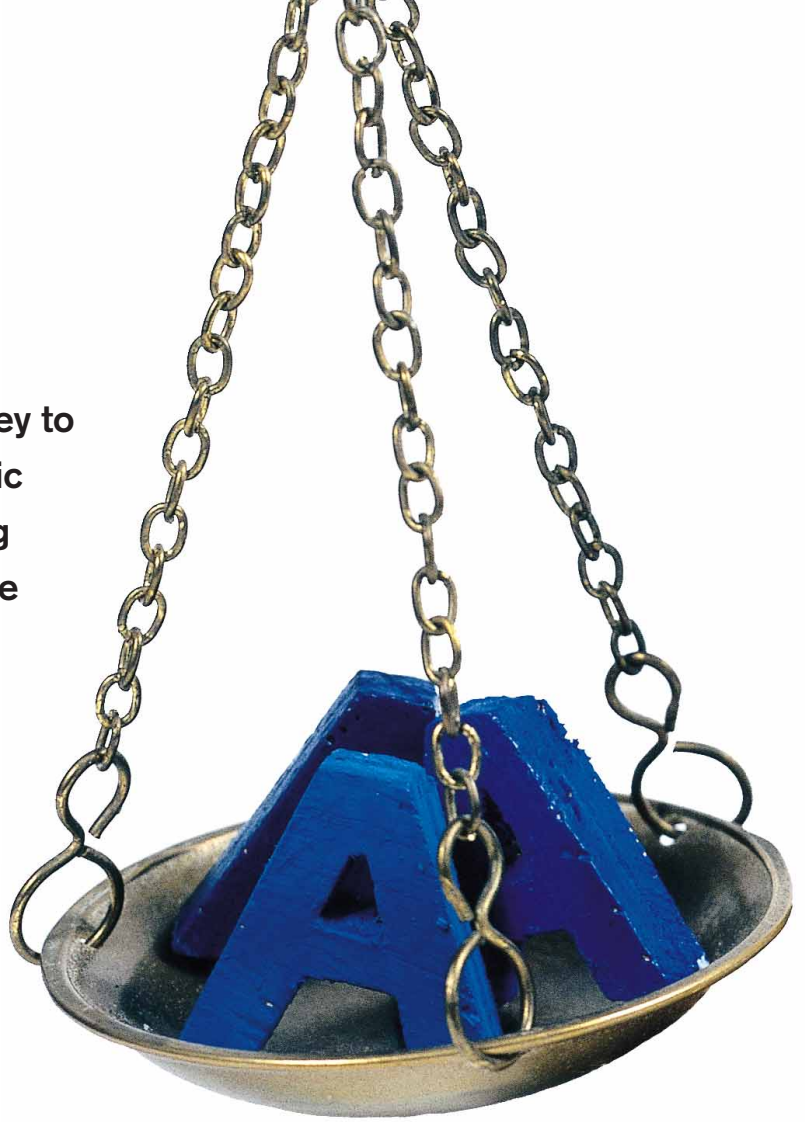
Footnotes

1. They also imply the Governor should be writing Open Letters about half the time, although because of the persistence in inflation these will tend to come in bunches, not at random intervals.
2. The empirical backing for the claims in the text appear in C. Bean, 'The New UK Monetary Arrangements: A View from the Literature', *Economic Journal*, November 1998.
3. These results were reported by a member of the MPC, Charles Goodhart, in the annual Keynes lecture delivered to the British Academy, the text of which is forthcoming in the Bank of England Quarterly Bulletin. In this class I would place the MPC's collective decisions over interest rates in Summer 1997: it was hardly a secret that the Bank thought interest rates ought to have been higher in the run-up to the election, yet the MPC collectively chose not to raise rates significantly immediately on taking over responsibility for interest rates, preferring instead a sequence of 1/4% point steps.
4. For instance in February 1998 the MPC minutes cited the argument for not raising interest rates, despite worries about incipient inflationary pressures, on the grounds that an increase in interest rates might soon have to be reversed, whilst the same 'wait-and-see' argument was used to justify a small, rather than large, cut in October 1998.

Photograph of the Bank of England courtesy of The Corporation of London.



Education is now seen as key to improving Britain's economic performance; and improving educational standards is one of the government's principal objectives. The challenge is to ensure that reforms work in the way they are intended to. Anna Vignoles examines the controversy over planned changes to the A level system.



A levels: does less mean more?

Are A Levels really the 'gold standard' of the English secondary education system? As the number of graduates continues to rise in the UK, amid a growing perception that educational standards are falling, proponents claim that A Levels are our only guard against further deterioration in the quality of our education system. Public confidence in these rigorous and internationally respected qualifications remains high. Indeed many employers base their graduate recruitment on A Level grades, rather than degree results, as an apparently more effective way of identifying able applicants.

Yet critics of the A Level system claim that it does not adequately prepare students for the world of work, offers too narrow a curriculum and does not provide students with the essential skills they need. This view is summed up by the British Institute of Management who claim that 'A levels provide overly specialised knowledge to a narrow elite...' (The Independent, 26 June 1997). More recently Sir Ron Dearing, in his review of 16-19 education, successfully pressed the case for reform. Although the government has remained firmly committed to A Levels, students will now be encouraged to take up to five different subjects in their first year of sixth form¹, possibly in addition to a 'key skills'

¹ Students will take revised Advanced Subsidiary (AS) qualifications after the first year of sixth form: these exams will equate to the first half of a full A Level course.



Is a 'broader' curriculum 'better'?

The extent of subject specialisation at A Level is illustrated in Table 1 (below). It is clear from this that the academic curriculum at 16-19 currently appears to be very narrow for many students. In 1997, for instance, 32% of pupils with 3 or more A Level passes took only social science or arts subjects, while 60% specialised either in all science or all non-science A Levels. A relatively small proportion (40%) studied a mixture of both. Other sources indicate that the degree of specialisation at A Level is even more pronounced among graduates: only 30% combine science and non-science subjects at A Level.

course in information technology, communication and the 'application of number'.

Our research (using data from the National Child Development Study and a national representative sample of 1980 graduates) indicates that firms do not prefer individuals who study a broader curriculum at A level. Students who take a broader range of A Level subjects at age 16-19 earn no more once they start work than pupils who study a more specialised curriculum. In fact, pupils who take A levels in closely related subjects seem to do better academically and are more likely to get a degree. Moreover, firms do pay a large wage premium for individuals who have A Level mathematics, suggesting a relative shortage of numerical skills.

English 16-19 year olds therefore appear to study a narrow curriculum, normally taking only three A Levels, often in closely related subjects. This degree of specialisation is markedly greater than in many other European countries – including Scotland (where the educational system differs significantly in several respects). Table 2 (below) shows the difference between the 16-19 curriculum of a sample of English and Scottish graduates: it indicates the proportion of English and Scottish graduates who took only science subjects at 16-19, those who took only non-science subjects and those who took a mix of the two. The vast majority of the Scottish students took both science and non-science subjects at 16-19, whereas less than 30% of the English graduates studied such a broad curriculum.

Since the main objective of the proposed reform of the A Level system is to broaden out the curriculum at age 16-19, a crucial question is whether taking a broader range of subjects at A Level is in some sense 'better' for students

Table 1 A Level Specialisation

Subject Specialisation	Female	Male	Total
Specialised – taking science and mathematics subjects only	11%	25%	18%
Specialised – taking social science subjects only	3%	6%	4%
Specialised – taking arts subjects only	10%	3%	7%
Specialised – taking social science and arts subjects only	39%	23%	32%
Non-specialised - taking both science and non-science subjects	37%	43%	40%
Total	100%	100%	100%


Source: Department for Education and Employment, Statistics of Education, 1997.

This table includes all 17 and 18 year olds in schools and FE colleges who achieved 3 or more A Level passes.

Table 2 English/Scottish Comparison of Curriculum at Age 16-19

	English Graduates	Scottish Graduates
Specialised – taking science and mathematics subjects only	28%	4%
Specialised – taking only non-science subjects	45%	23%
Non-specialised – taking a mix of science and non-science subjects	27%	73%
Total	100%	100%

Source: Department of Employment, 1986 UK National Survey of Graduates and Diplomates.



If a 'broader' education is better in the sense of enabling individuals to be more effective in their jobs, one would expect to see firms paying a wage premium to attract the relatively few students who take a wider range of subjects at A Level.

and/or employers. If students who take a wider range of subjects at A Level are actually more productive in the workplace, this would provide some evidence that a broader curriculum is superior. There may be numerous non-economic reasons to broaden the curriculum, for example to enhance pupils' enjoyment of learning. But most of the arguments used in public debate on this issue have focused on the need for students to have a broader range of knowledge and skills to meet the demands of the labour market: so the economic arguments for A Level reform merit particular attention. If a 'broader' education is better in the sense of enabling individuals to be more effective in their jobs, one would expect to see firms paying a wage premium to attract the relatively few students who take a wider range of subjects at A Level. This is what we set out to discover.

Breadth doesn't pay

There are a number of different ways one might evaluate the breadth of an individual's curriculum at A level. We counted the number of different curriculum areas he or she had studied, taking into account the overall number of A Levels they had obtained. For example, an individual who took A Levels in mathematics, humanities and arts would be considered 'broader', having studied 3 different curriculum areas, than an individual who had taken the same number of A Levels but only in science subjects. Our model then measured the effect of A Level curriculum breadth on these individuals' eventual salary level, taking into account a multitude of other factors that are known to influence earnings (such as whether the person went on to get a degree or not). We found that individuals who study a broader curriculum at A Level do not earn any more than those who are more specialised at 16-19.

There are other possible indicators of curriculum breadth at 16-19, such as having a general studies A Level. Yet again, individuals with general studies A Level earn no more than those who do not take this qualification. What's more, Scottish students appear to earn no more than their English counterparts as a result of their greater curriculum breadth. This evidence clearly shows that firms are not currently interested in hiring, and paying more for, individuals who have a broader educational background.

Specialisation is more rewarding

Interestingly, we also found that pupils who study a more specialised A Level curriculum are more likely to get a degree, either because they are more likely to apply and get accepted into higher education or because they are more likely to succeed once they get there. This may reflect the fact that university entry requirements tend to favour students with greater subject specialisation. Equally, students may find the three year degree course offered in England and Wales more manageable if they have already specialised in their subject area at A Level. Attempts to reform the A Level system and broaden the curriculum at

16-19 may therefore be unsuccessful without also reforming our 3 year degree system. Some universities have already put forward a case for extending the 3 year degree to 4 years, citing a decline in the standard of applicants in support of such a change. Broadening the curriculum at 16-19 is likely to reduce the subject specific knowledge of higher education entrants even further, making it still more difficult to sustain a three year degree programme.

Not enough maths and science?

A rather different accusation levelled at the A Level system is that it does not provide sufficient numbers of students with some of the important skills required by employers. In particular, employers have complained about the difficulty of recruiting individuals with advanced mathematics and scientific skills. It's true that a large proportion of individuals drop science and mathematics altogether at age 16. Table 1 (previous page) shows that 43% of students with 3 or more A Level passes take no science or mathematics at all at age 16-19. Even more striking are the figures in Table 3 (below) showing that in 1997 only 9% of all A Levels entries were in mathematics and 21% in science. This compares to the growing popularity of social science and arts subjects, which together constituted nearly half of all A Level entries last year.

Standard economic theory suggests that if there is a shortage of a particular skill, then individuals who possess this skill will earn more than those who do not, at least in the short run. Over the longer term, of course, one would expect the higher earnings associated with a particular skill to provide an incentive for individuals to invest in education or training to acquire that skill. This in turn would increase the supply of the skill, and reduce the wage premium associated with it. So one way to verify whether there is really a shortage of higher level mathematics skills is to assess whether employers actually pay a wage premium for workers who have mathematics A Level. They do. Individuals who have mathematics A Level earn between 7% and 11% more than otherwise similar individuals who

Table 3 A Level Subject Entries

Subject	No of entries	Proportion
Sciences	150,547	21%
Mathematics	63,858	9%
Social sciences	216,415	30%
Arts	121,250	17%
English	89,043	13%
General Studies	72,456	10%
Total No of Entries	713,569	100%

Source: Department for Education and Employment, Education Statistics, 1997. This table includes all candidates in schools or FE colleges.



Our evidence shows that students have no real incentive to take on the additional workload of taking extra courses at A Level, particularly in subjects that are very different from their three main A Levels.

do not take mathematics beyond the age of 16. An economics graduate who has mathematics A Level will earn up to 11% more than a similar economics graduate who has not, clearly an impressive wage premium. Other skills and knowledge, such as those embodied in a science A Level, did not appear to be in such relatively short supply.

So why doesn't everyone take maths?

An obvious question is why students who could potentially earn more if they took mathematics A Level do not choose to do so in sufficient numbers. One possibility is that the wage premium paid to those with maths A Level is merely temporary. Over the longer run, we may expect the numbers taking maths to increase and the wage premium associated with mathematics to fall. But our research suggested that the wage premium may be more permanent, since we found evidence of it in both the 1980s and 1990s. One possible explanation for this is that many students lack the preparatory knowledge required to take mathematics A Level. Certainly mathematics is commonly thought of as a 'hard' subject by A Level students. Alternatively, students may be unaware of the wage premium associated with mathematics A Level. Both of these potential problems would suggest that attention should be focused on the 14-16 age group, in terms of developing their mathematics skills further and informing them of the benefits of continuing mathematics past the age of 16. Equally, if all 16-19 year olds were required to take mathematics to a higher standard than GCSE, this might meet at least some of the needs of firms.

The right way forward

In a properly functioning market, relative wages should provide an unambiguous indication of any skills shortages. If individuals who study a broader A Level curriculum are more productive and in relatively short supply, then they should earn higher wages. Yet our research found no evidence that employers value students who take a broader A Level curriculum more highly. This result has several policy implications. Since students do not earn any more from taking a broader 16-19 curriculum, there is little incentive for them to follow the government's recommendations and take extra subjects at A level. This will especially be the case if a broader curriculum entails more effort on the part of students. Unless the government decides to impose curriculum breadth at A Level, it is unlikely that reforming AS Levels and encouraging students to take 5 subjects in the first year of the sixth form will have a huge effect on the curriculum actually taken by pupils at 16-19. Even if students do opt to take the reformed AS Levels, they may be inclined to take them in subjects that are complementary to their main A Level subjects, thereby not significantly broadening their curriculum.

Furthermore, the fact that more specialised A level students appear to do better when it comes to higher education is

likely to reinforce opposition to broadening the curriculum. If universities do take the view, as they appear to, that students need to be specialised prior to starting a three year degree course, the success of the government's proposals to broaden the 16-19 curriculum will depend on the co-operation of universities in changing their entry requirements to put less emphasis on subject specialisation.

But it is also possible that A Level specialisation genuinely enhances students' performance in higher education. Certainly the English 3 year degree system requires students to have a high level of subject knowledge, prior to entry into university, to cope with the workload. This may mean that broadening the curriculum at 16-19 will be difficult, without also lengthening degree courses. Our evidence shows that students have no real incentive to take on the additional workload of taking extra courses at A Level, particularly in subjects that are very different from their three main A Levels.

Maths again

The continuing high premium paid to those with Mathematics A Level is evidence that, in some respects, the education system is currently failing employers. The government's emphasis on mathematical key skills, as well as the much publicised numeracy campaign and the proposed 'free standing' maths courses for adults, suggest the shortage of mathematics skills is at last being taken seriously. But here too reform needs to be carefully thought through. A key skills course aimed at developing students' advanced mathematical skills, and targeted particularly at individuals who do not intend to take mathematics A Level, may help meet the needs of employers and benefit students. But a course in lower level mathematics will not necessarily benefit employers or students. The details of the government's proposed 16-19 key skills course are as yet unclear but there is a danger that the standard may be set too low in order to accommodate students doing vocational qualifications (NVQs and GNVQs).

Reforms which work

Everyone endorses the objective of raising educational standards. How this is best achieved is rather more controversial. There is a danger that high profile reforms will not meet expectations because they do not take sufficient account of the evidence available. Our research suggests that the current A Level system may have more going for it than its detractors would have us believe.

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This article is based on research undertaken with Peter Dolton, who is an associate of the CEP, at the University of Newcastle on Tyne.

Brave new world?

A year ago, CentrePiece published an article about telephone call centres and the new working environment they provide for an increasing number of British workers. This article and the groundbreaking research on which it was based attracted enormous attention – a reflection of the extent to which the service sector provides jobs for an increasing number of British workers. These work patterns are the subject of a growing body of research at the CEP: and here Sue Fernie reports on the findings which emerged from a recent conference held at the Centre.

In the summer of 1998, 12 million people – more than half the British workforce – were employed in the private service sector, a massive 20% increase over the previous 5 years. By contrast, only 4.7 million were employed in private manufacturing, a figure hardly changed since 1993. The days of Britain as the workshop of the world are long gone; instead we are engaged in “customer service”, and often perform this role in a purpose-built, aircraft hangar-style, modern construction, miles away from our customers. We smile sweetly and mention nice days when we hand over the cappuccino, and offer back massages to stressed out city workers as they ponder the provenance of their next million. We often work at night and weekends, sometimes for very low pay, and usually in a non-union environment.

Conscious of the need to know more about how these new industries work and how workers fare in them, the CEP has been conducting new research in this area, and trying to pull together research going on elsewhere. A few weeks ago, a group of Centre researchers met with academics from across the UK to look at three main themes: the nature of the 24-hour economy and the implications this has for the composition of the workforce, the hours and times they work and how this differs from other sectors; payment systems and levels of pay; and problems of employee representation in a sector that has traditionally been seen as difficult to unionise.

The 24-hour economy

Round the clock shift-working is hardly a new phenomenon. What is new is its recent and rapid extension from manufacturing into services. Can there



be anyone who doesn't know that it's possible to bank or shop at any time of the day or night – even if they themselves don't use those facilities? The media has become fascinated with the impact these dramatic shifts in the British lifestyle have had on people's working lives. Susan Harkness of the CEP has found that those employed in services are particularly likely to work part-time, during the evening or night, and at weekends – indeed, in 1998 only 51% of employed men and 38% of women worked full-time for five days a week. More than one in five private service employees work evenings on a regular basis, and nearly a third of service workers are part-time. Women are disproportionately represented in this sector, and these women are likely to be low paid. Using data from the Labour Force Survey, Susan Harkness examined in detail changes in the length of the working week, times of the day worked, and days of the week employed. She then went on to look at how the composition of service sector workers has changed, and concluded by examining the difference in earnings according to the times people work in order to assess whether those working antisocial hours face a double burden of low pay and undesirable hours.

Service workers lose out

Throughout the economy hours of work have increased over the last decade, with more men and women than ever before doing in excess of 50 hours per week. This is because overtime has assumed more prominence; and is especially true in the service sector where the average number of overtime hours each week has increased from four to seven in ten years. Service workers are much more likely to work unpaid overtime than those in manufacturing. They are also more likely to be low paid if they are employed at night. These shifts in working patterns have important considerations both for the organisation of society, and, given the predominance of women in the sector, for the organisation of family life. For example, women with children living in two-parent families are 50% more likely to work evenings than those without, and in a quarter of two-parent households at least one parent regularly works during the evening.

Controlling the workers

One of the striking features of much service sector employment is the problems employers face in organising and managing their workers. Richard Coopey, Sean O'Connell and Dil Porter of the Business History Unit at LSE provided an illuminating example of this with their historical account of the development of British mail order retailing in the twentieth century. Many of the concepts they introduced found echoes elsewhere in the conference's consideration of service sector work. Coopey and his colleagues described the evolution of a culture of control in the mail order industry and identified four key stages that carry labour controls from the era of the family firm through to the big five mail order companies of the 1990s – companies such as Littlewoods and GUS – with their massive investment in computer-enhanced managerialism, especially in the call centre, nowadays the heart of the mail order operation. The impact of this latter strategy has been, according to Coopey et al, to tighten labour control throughout the entire mail order operation – even including more intense monitoring of the spare time agent who traditionally enjoyed a good deal of autonomy. The capacity to impose an enhanced level of labour control derives from a more forceful, market-driven information processing function and these technological and social aspects of monitoring and control are fundamental to two others papers presented at the conference.

Call centres and control

My own work on payment systems in call centres has seen the ability to monitor input and measure output as being crucial to the choice of payment system by the firm, and I have also examined the consequences of such systems for productivity, financial performance, turnover and absenteeism. Jeremy Bentham first coined the term *panopticon* to denote an ideal prison; Foucault adopted it as a metaphor for the workplace of the future and our mail order historians talk about the corporate panopticon in their work. The concept of control this term implies is also useful in relation to call centres. As well as being able to measure individual contributions, the automatic call distribution (ACD) technology – which routes calls



We are engaged in “customer service”, and often perform this role in a purpose-built, aircraft hangar-style, modern construction, miles away from our customers.



automatically to the next available operator – enables an accurate assessment to be made of team-working. But technical monitoring is not enough to achieve superior performance. Proper performance appraisal, combined with real team leadership, allows a qualitative supervisory dimension to complement the technological measuring and monitoring. It transpires that those centres with organised teams where those teams are the unit for reward have better productivity than centres which rely merely on individual performance pay.

Services and the minimum wage

Of course, call centre workers enjoy on average rather higher wages than many service sector workers. They are likely to retain this edge for the foreseeable future. However, thanks to a unique experiment in social partnership, nearly 2 million workers will receive on average a 30% pay rise in April when the National Minimum Wage (NMW) is introduced. Two-thirds of the beneficiaries of the NMW work in the private service sector. David Metcalf, himself a member of the Low Pay Commission which advises on the NMW, has some particularly insightful observations on low paid occupations, six of which are found in the service sector. He found that when analysing why some people are low paid, there appears to be a specific “occupation effect”, and advances three sets of reasons to explain this effect on the probability of being low paid. The first set involve sorting arguments, including low productivity workers matching themselves with low productivity firms, or some employees (notably women) having a taste for low paid work and accepting lower wages accordingly. Second – and here the monitoring problem raises its head again – it may be that monitoring people in low paid jobs is easier than many others and therefore there is less need to pay efficiency (i.e. above the going rate) wages. Third, the industries may not have any supernormal profits to share with employees, and of course, as these are very low union density firms, there is no union mark up here. He also shows, worryingly, that those in one of the lowest paid occupations this year are more likely to be out of work next year than those in other occupations. (For a fuller discussion, see the following article by David Metcalf.)

The very low paid

Among service workers on the lowest pay scales are those in residential care homes. The CEP’s Steve Machin and Alan Manning have therefore been looking at a very specific labour market, that for care assistants in residential homes for the elderly on England’s “sunshine coast”. That sector corresponds closely to economists’ notion of what should be a competitive labour market, i.e. there is a large number of small firms undertaking the same job in concentrated geographical areas, and the employees are not unionised nor covered by any wage legislation. They have concluded, however, that the competitive model is inadequate to explain the very small amount of wage dispersion there is *within* firms (or homes in this case) and the large amount *between* firms.

Machin and Manning have also found that what wage dispersion there is does not seem to be closely related to the characteristics of workers which would normally be associated with higher productivity. So they believe that it is more helpful to think of firms as having considerable discretion in the setting of wages: these firms choose simple wage structures, and workers then sort themselves among firms.

What about the workers?

Workers in care homes tend not to be represented by unions: and this is typical of many workers in the service sector, an area which has traditionally been devoid of a union presence. The TUC is now taking it upon itself – in its New Unionism campaign – to focus on organising and recruiting atypical workers, which can mean women, young workers, or black workers, but can also mean trying to get a foothold in greenfield sites. At the CEP conference, Melanie Simms of Cardiff University described a case study involving the Communication Workers’ Union and its attempts to organise in a call centre. She was interested in why the CWU adopted the “organising” approach, which raises specific issues about the suitability of traditional union structures for “atypical” workforces, and asked whether occupational unionism might be another way of appealing to both employers and employees. In this particular example, the CWU have successfully recruited more

Workers in care homes tend not to be represented by unions: and this is typical of many workers in the service sector, an area which has traditionally been devoid of a union presence.



than half of the full-time employees; but management are not considering recognition, nor have they opened a permanent dialogue with the union.

Sailors do even worse

An altogether bleaker picture of working life was painted by Tony Lane, also of Cardiff University, in his discussion of flags of convenience and the global labour market. Ships and their crews are largely invisible to most of us, even though they shift some 95% of the world's internationally traded raw materials, primary products and manufactured goods. Until the last quarter of the twentieth century, the industry was dominated by shipowners based in Europe, North America and Japan, and was regulated by nationally-based networks of institutions, legal codes, institutional rules and normative practices. The rapid growth of flags of convenience (FOC) from the mid-1970s subverted all regulation and the greatest impact was on the labour market.

Nowadays, the typical crew is multinational; career paths, conditions of work and shipboard social life, education and training have all deteriorated sharply. Of the 119 vessels abandoned since July 1995, 62 were registered in Panama, the biggest FOC register. Seafarers who work on FOC ships are often given strict instructions not to make contact with the International Transport Federation, or are made to sign contracts in which they promise not to do so. About half of all seafarers earn less than the ITF's benchmark wage (currently US\$1,200 per month) and those working on FOCs face at least twice the risk of being killed at sea compared with those on board the national flags of advanced industrial nations.

Hanging on

Given all this, a recent survey carried out by the ITF, in which seafarers expressed great dissatisfaction with their pay, promotion prospects and general stress levels hardly came as a great surprise. So why do sailors stay on in these conditions? This must be, at least in part, because 23% of seafarers in the survey supported five or more people on their wages, and more than three quarters

looked after at least two other people.

It is hardly any wonder, then, that seafarers hang on to their jobs, whatever the difficulties. But what about people doing more ordinary service work? Donna Brown and Steven McIntosh of the CEP looked at levels of job satisfaction and at the relationship between satisfaction and turnover in four other service occupations: hotels, fast food, leisure and retail. Some of their findings might have been predicted: the well-educated, for example, are much less satisfied working in these service sector firms than the less well-qualified; while people in more senior positions were more satisfied. But women and older workers were also likely to be more satisfied. And most surprising was the apparent absence of any link between job satisfaction and worker turnover; those dissatisfied at work are no more likely to leave than their more satisfied colleagues.

All the evidence suggests that private services will continue to expand well into the next century, both as a share of total GDP and in the number of people employed in the sector. As more people are directly and indirectly affected by these changes in the nature of the economy, the implications for British employment trends, the role of work organisation including performance pay and teamwork, and the vexed question of how to give workers a voice will all assume increasing importance. The CEP intends to be at the forefront of the effort to throw more light on these issues.

Sue Fernie is a member of the Firms and Workers programme at the CEP.

A CEP book on industrial relations in the services sector will be published next year.



The way out?

Low pay and the services sector

Britain's first National Minimum Wage will be introduced in April this year. There has been much speculation – some of it in previous issues of CentrePiece – about the likely impact on employment and on individuals currently earning below the £3.60 per hour at which the new minimum wage will be set. Here, David Metcalf, Deputy Director of the CEP and a member of the Low Pay Commission, assesses the significance of the minimum wage for workers in the service sector.

It is hard to overestimate the importance of the National Minimum Wage for service sector workers. Two thirds of all those who will benefit from its introduction are in the private service sector. Low pay in Britain is concentrated in a relatively small number of occupations to a remarkable degree: half of all the low-paid, for example, are in just six occupations. Why is this so? Part of the explanation must lie in the fact that these occupations require less human capital and are found in workplaces which have characteristics traditionally associated with low pay – such as few employees and no unions.

But there is also an *occupation effect*. This can be seen in what Mark Stewart, its originator, has called the basement dozen of the pay league: those occupations whose workers have a much higher probability of being low paid than workers elsewhere in the economy. Significantly, workers in these occupations are also more likely to find themselves in the low pay – no pay cycle: they are more likely to find themselves out of work than people in other jobs, and the jobs they do do not currently tend to offer a step up on the ladder of economic welfare. Understanding this occupation effect of low pay will, in the long term, be crucial to our understanding of the impact of the national minimum wage.

The overall impact is clear...

The overall impact of the NMW is set out in Table 1 (overleaf). One employee in 12 – 1.9 million people – will gain from the NMW receiving, on average, a 30% pay rise. The cost of bringing these workers up to the NMW is equivalent to 0.6% of the national wage bill. The proportion of 18-21 year olds covered (14%) is substantially higher than that for those aged 22+ (7.8%) and the additions to the wage bill will be some four times higher for youths than for adults. Female part-time employees account for over half of all beneficiaries and the extra wage bill costs for female and male part-timers is substantially greater than for full-timers. As we've already seen, two thirds of the beneficiaries are in the private service sector.

The 1998 Workplace Employment Relations Survey also contains interesting evidence on the incidence of low pay among workplaces. This evidence refers to a nationally representative sample of 1,890 workplaces with 25 or more employees. Low pay is overwhelmingly a private sector

We know that workers in unionised establishments receive higher pay, other things equal, than their non-unionised counterparts

Table 1 Coverage and cost of the National Minimum Wage

Group	Numbers affected (000's)	Percentage of group affected	Percentage increase in wage bill	Average increase for those affected (%)
All workers 18+	1,903	8.3	0.6	30
18-21	221	14.0	2.7	30
22+	1,683	7.8	0.6	30
Male full-time	357	3.2	0.3	-
Male part-time	211	20.5	3.5	-
Female full-time	335	5.6	0.6	-
Female part-time	1,001	19.7	2.7	-

Source: Report of the Low Pay Commission (1998) table 7.1 updated using information from April 1998 New Earnings Survey and Spring 1998 Labour Force Survey.

Notes: Data are based on ONS central method combining information from the NES and LFS. Rates for April 1999 have been deflated back to Spring

1998 by the forecast change in the RPI to yield benchmarks of £2.90 for those aged 18-21 and £3.50 for those aged 22+. Alternatively 10p can be added to the initial 1999 rates so that the NMW figure of £3.60 is equivalent to an average earnings figure of £3.70 reflecting e.g. overtime and shift premia and the London allowance. The £3.70 can then be deflated by the AEI, which again translates into an earnings figure of £3.50 in Spring 1998.

Table 2 Proportions Paid below £3.50 per hour in Selected Occupations

Occupation	Prop.	Raw difference	Adjusted difference
Hairdressers, barbers	.587	.523	.346
Waiters, waitresses	.562	.498	.336
Bar staff	.488	.425	.255
Cleaners, domestics	.487	.423	.309
Sewing machinists, menders, darners, etc.	.476	.413	.322
Kitchen porters, hands	.435	.371	.247
Counterhands, catering assistants	.402	.339	.257
Childcare and related occupations n.e.c.	.374	.311	.167
Care assistants and attendants (health)	.320	.257	.169
Retail cash desk and check-out operators	.314	.250	.148
Sales assistants	.309	.245	.117
Security guards and related occupations	.243	.179	.166
Other occupations	.064	-	-
All occupations	.109	-	-

Source: Stewart (1999) from LFS spring 1997. Sample size is 8288 of which 1,237 individuals are in the 12 lowest paid occupations.

Notes: Table can be interpreted as follows using bar staff as an example:
 1. 48.8% of bar staff earn under £3.50 an hour (spring 1997), the corresponding figure for all occupations is 10.9% and for occupations other than those in the table is 6.4%.
 2. The raw differential in the probability of being paid under £3.50 for bar staff compared with other occupations is 42.5%.
 3. But some of this raw differential is attributable to the various individual and workplace characteristics associated with the different

occupations. The controls are: gender; age; age completed full-time education; highest qualification equivalent; apprenticeship; marital status; nationality; ethnic origin; health problems which limit the kind of or amount of work; hours; contract type; job related training in the last 3 months; sector; number of employees; shift work; date started with current employer; region. Once these controls are made the adjusted differential drops to 25.5%. Thus about one third of the raw differential is explained by the other individual and workplace characteristics but two thirds remain. It seems therefore that there is an occupation specific low pay effect.

Those in one of the 12 low paid occupations one year ago are more likely to be out of work now than those in other occupations.

phenomenon: 93% of public sector workplaces had no workers earning below £3.50 an hour in 1998 (roughly equivalent to the £3.60 an hour NMW from April 1999) and only 1% had a quarter or more of their workforce earning below it, compared with 13% of private sector workplaces. Within the private sector it is heavily clustered: in the WERS sample there were no workplaces in electricity, gas and water, transport and communications, and financial services where a quarter of the workforce are paid below £3.50 an hour. By the same measure, half of all workplaces in the hotel and restaurant industry had a quarter or more of the workforce earning less than this at the time of the survey. Workplaces where unions were recognised were much less likely than their non-union counterparts to have a quarter of their workforce earning below £3.50 an hour.

...as is its impact on some occupations

But it's the potential impact of the NMW on certain jobs which is most striking. Low pay is remarkably concentrated by occupation. Evidence from the 1998 New Earnings Survey for all employees (full-time and part-time) shows that over one third of adults earning less than £3.50 an hour are cleaners, sales assistants and bar staff; yet these occupations only account for 9% of all employment. Further, half of all the low paid are in just six occupations – the bottom three plus care assistants, counterhands and kitchen porters and hands.

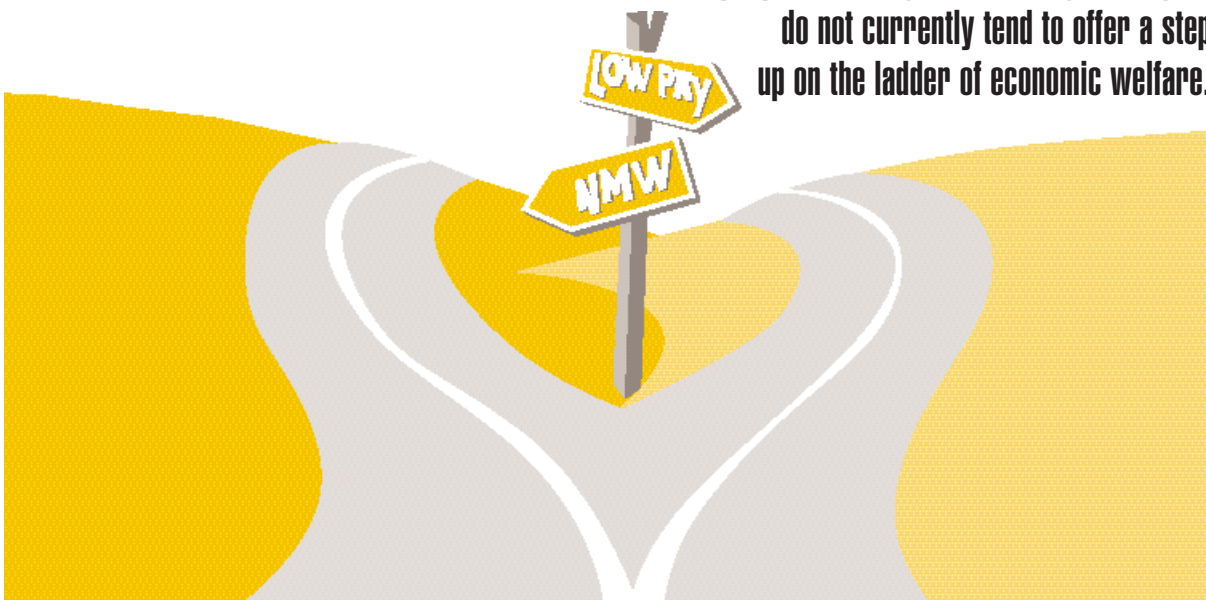
Table 2 sets out this occupation effect, focusing on the basement dozen of the pay league. For all occupations the proportion earning below £3.50 is 10.9%. For the basement dozen it ranges from 58.7% for hairdressers to 24.3% to security guards. In all occupations other than these, only 6.4% of workers earn below £3.50 an hour. The

second column presents the raw differential between the probability of low pay in the specific occupation (e.g. 0.587 for hairdressers) and all other occupations (0.064). [See the Table notes for an explanation of these terms]. But how much of this raw difference is accounted for by the characteristics both of the workers in and workplaces employing the people in these occupations? This is investigated by controlling for many such factors [also explained in the Table 2 notes]. The answer is remarkably little. Controlling for age, education, tenure, gender, nationality, health, hours, region, workplace size and so on typically reduces the raw differential by only around one third. The adjusted differential in the probability of low pay is, in most occupations, around two thirds of the raw differential. In other words, employees in these occupations are still far more likely to be low paid than those in the base group.

Easy to identify – but hard to explain

All this suggests that there is an 'occupation-specific' effect on the probability of low pay. Explaining this effect, however, is far more difficult. One obvious factor could be related to measurement of this effect: it is probable that the control variables do not fully capture either the differences in productivity among individuals or the characteristics of the workplace which affect pay.

Workers in these occupations are also more likely to find themselves in the low pay – no pay cycle: they are more likely to find themselves out of work than people in other jobs, and the jobs they do do not currently tend to offer a step up on the ladder of economic welfare.



Low pay is overwhelmingly a private sector phenomenon: 93% of public sector workplaces had no workers earning below £3.50 an hour in 1998 and only 1% had a quarter or more of their workforce earning below it, compared with 13% of private sector workplaces.

But that is unlikely to be the whole story. It could also be that, on the demand-side, many smaller firms use labour inefficiently making, for example, few investments in staff development. On the supply-side those with low ability or motivation – some of which is not captured by the controls – will gravitate to such firms. These two factors taken together imply that these occupations have low productivity and hence low pay. It is noticeable how few workers in these occupations receive incentive pay. Perhaps less able workers gravitate to firms using time rates.

Another explanation is that many female employees with children require part-time work which is near home (i.e. they are drawn from a limited geographic labour market). This gives the employers some monopsony power over such employees in these basement dozen occupations; the result is low pay. It is also possible that workers in these occupations are prepared to take lower pay because they receive pleasure from caring for the elderly or dealing with the general public. Thus they accept a (negative) compensating wage differential to work in these occupations.

Easy and cheap to control

Monitoring of worker performance could also play a role. There are two main ways of eliciting effort from employees: either they can be given incentives in the form of higher pay; or more resources can be devoted to supervision and monitoring their behaviour. For most of these very low paid occupations it is probably straightforward to monitor employees' behaviour. The jobs are very well defined and involve only modest discretion. Therefore, as compared with occupations higher up the pay league table, there is less need to pay more in these occupations to elicit effort. Moreover, this effect is likely to be compounded by the fact that supervisors' time in these lower level occupations may not be very valuable. By contrast, managers' time in other sectors or organisations is more valuable, so these other occupations are maybe inclined to pay more to elicit effort.

This latter effect may be compounded by outsourcing. Take cleaning and security for example. Firms increasingly find it cheaper to outsource cleaning and security to business

The claim by the Low Pay Commission that 'the pressure to restore pay differentials following its introduction will be limited and localised' is likely to prove correct.

service companies like Rentokil, Initial and Pinkerton. Managers' time in these sub-contractors is less valuable than it is in, for example, a bank or a hospital and therefore Rentokil's managers are able to devote more time to monitoring their staff. This leads to the prediction that for a specific occupation – say cleaners or security guards – those employed by a contractor would, other things equal, be paid less than those employed directly by the firm. Evidence from Incomes Data Services tentatively confirms this prediction.

Firms' concern for their reputation may also be important. It is sometimes asserted (see e.g. *The Economist*, 30 May 1998) that managers in some firms wish to develop reputations for paying their subordinates well – perhaps because such a reputation enhances loyalty and commitment. It is possible that such reputation effects are less important – particularly among small firms – in sectors like hospitality, retail, contract cleaning and security.

Industrial effects may be part of the story

It is well-known that there is an industry effect on pay, often explained by firms sharing any extra profits with their employees. Many of these occupations are industry-specific: including hairdressing, sales assistants, care assistants, waiters/waitresses and bar staff (but not cleaners or security guards). These industry-specific occupations are in industries which surely have no rent to share: their product markets are very competitive and labour costs are a high fraction of total cost. Hence they languish at the bottom of the occupation league table with their own occupation-specific effect mirroring the industry-specific effect.

Unionisation – or lack of it – is also potentially a significant factor. We know that workers in unionised establishments receive higher pay, other things equal, than their non-unionised counterparts. The levels of unionisation among these occupations is very low: for example in the private sector, only 5% of workers in hospitality are union members: the figure for business services is 8% and in retail it is 10%. Therefore fewer employees in our basement dozen occupations receive the pay premium associated with union recognition than do those in many more highly paid occupations, and this contributes to these basement occupations having a higher probability of low pay.

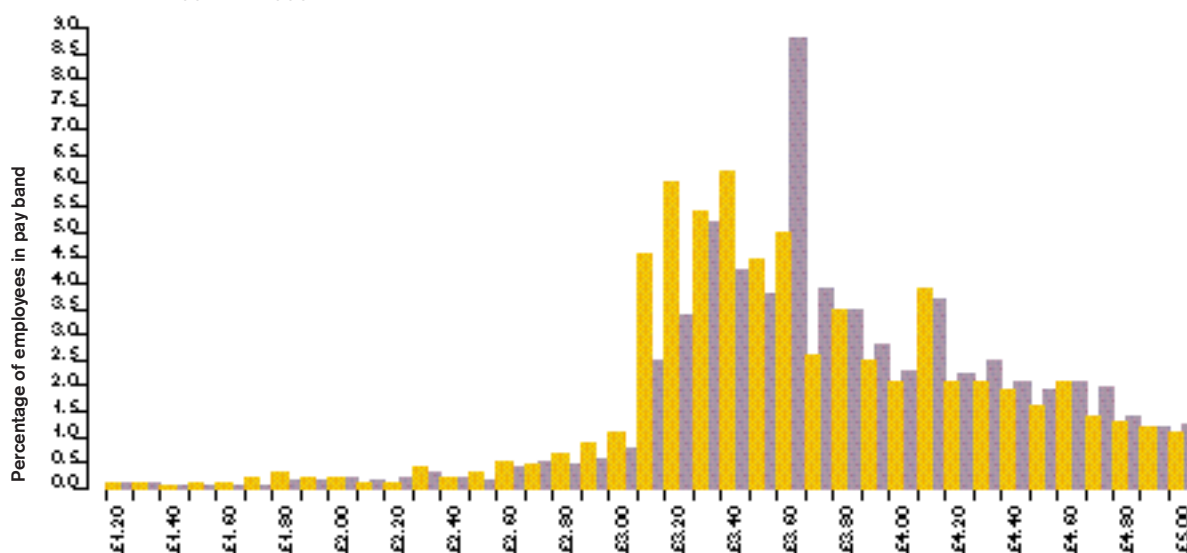
A vicious circle

These basement dozen occupations play an important role



Those in one of the 12 low paid occupations one year ago are more likely to be out of work now than those in other occupations.

Figure 1 Distribution of hourly earnings in Hospitality
 ■ 1997 ■ 1998



Source: NES, all employees aged 18 or over whose pay was unaffected by absence

in the low pay – no pay cycle. For example Mark Stewart in a forthcoming book reports that 29% of those not working a year ago are now employed in one of these 12 occupations, compared with only 13% of those who were already in work a year ago. Looking at it the other way round, those in one of the 12 low paid occupations one year ago, are more likely to be out of work now than those in other occupations. This would perhaps be less of a cause for concern if the low paid jobs are a stepping stone to higher paid jobs. But they do not appear to be. Those in the basement dozen in 1997 are less likely to be paid above £3.50 in 1998 than those out of work in 1997. As Stewart puts it, 'this suggests that low paid jobs are more likely to act as blind alleys than as stepping stones to positions higher up the pay distribution'.

able spike in the distribution around £3.60 such that almost a tenth of workers in that industry now receive the NMW.

Panel data from the NES for workers in the same job in 1997 and 1998 also shows that median earnings rose more between April 1997 and April 1998 for those earning below £3.50 an hour in 1997 than for all other pay bands. The rise in median earnings gradually tapers off up to about £7. Although we shall need to wait for the actual implementation of the NMW, this evidence tentatively suggests that the claim by the Low Pay Commission that 'the pressure to restore pay differentials following its introduction will be limited and localised' is likely to prove correct. But for low-paid workers within the service industries the impact will be far more significant and beneficial.

So how will these sectors respond to the minimum wage?

The Bank of England discussed the NMW in its August 1998 Inflation Report and was reasonably sanguine about its impact. This was partly because it expected many organisations to adjust to the NMW prior to April 1999 and because it did not anticipate any serious knock-on effects higher up the pay distribution caused by restoration of pay differentials for those above the minimum wage. Provisional evidence suggests that the Bank's expectations are correct.

Hospitality is the sector with the highest incidence of low pay. The distributions of hourly earnings in that sector in 1997 and 1998 are shown in Figure 1. There is already evidence – one year before its implementation – of a remark-

David Metcalf has drawn on the first Report of the Low Pay commission and subsequent documents in preparing this article. He wishes to acknowledge the contribution of fellow Commissioners and the LPC Secretariat whose ideas and research are reported here.

Further reading

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Riding the global financial storm

1998 was an unusually turbulent year in the international financial markets and the UK is not immune from its impact, which is chiefly transmitted via two channels: trade links and financial links. Guest Columnist Kate Barker, Chief Economist of the Confederation of British Industry, argues that although the risk of an outright global recession has receded, 1999 is still going to be a tough year for the UK economy.

In the late summer of 1998, the financial crisis emanating from East Asia spread to Russia and then Latin America. With the US threatened by a possible widespread credit crunch, the Federal Reserve was prompted to cut interest rates three times in seven weeks between the end of September and mid-November. The Bank of England followed suit, cutting the base rate in October for the first time since independence. In a more unexpected move, the euro-11 countries also co-ordinated to cut rates on 3 December to 3% (except for Italy, which lowered rates to 3.5%) ahead of the official birth of the euro.

Responding to this monetary loosening, share prices rebounded strongly. The danger of a major credit crunch started to abate as credit spreads narrowed; so too, did the immediate danger of a global recession. At the low point in

October, the global loss of financial wealth, relative to the peak in July, was estimated at \$2.3 trillion (equivalent to 19% of OECD consumer expenditure). Share prices subsequently rallied rapidly, with the Dow Jones Industrial Average crossing the 9500 level for the first time on 6 January this year.

Even so, with one third of the world economy already in recession, the UK cannot be immune from direct trade effects. UK exporters, already struggling with the strong pound, have seen their plight aggravated by the deepening of the international crisis over the past year. Not only do they see foreign demand dwindling, they also face intense price competition from the crisis economies in third country markets. Presence in overseas markets can only be maintained with a tight squeeze on profit margins. Domestic producers also find competition from imports intensified. At the time of writing, there is not much sign that these pressures will ease in the near future.

The crisis-stricken regions will continue to experience sluggish growth this year. According to the December Consensus Forecasts, the Asia-Pacific region is expected to grow at 0.5% this year, compared with a fall in output of 1.8% in 1998. Growth in Latin America, by contrast, is going to slow further from 2.4% in 1998 to 0.8% this year – a forecast made before the latest crisis in Brazil. This compares with 5.2% in 1997 before the crisis struck the region. Russia will continue to experience decline, with GDP falling by 6% for the second year running in 1999.

Trade is also indirectly affected. The rate of growth in world trade probably halved from 9.5% in 1997 to 4-5% in 1998 and global output growth reached only 2%, compared with the long-term trend of 3.4%. This second order effect may have partly explained Britain's widening overall trade gap from a small surplus in the third quarter of 1997 to a deficit of £1.8 billion a year later.

The outlook for the world economy in 1999 is grim with the IMF now forecasting world growth to be only 2.5%, up slightly on last year but still well below the actual growth of 4.1% in 1997. Even in the euro area, where growth will remain relatively robust, the rate will slow from 2.9% in 1998 closer to 2.0% in 1999. Against this background, the CBI forecasts that the UK visible trade deficit as a percentage of GDP will widen to 2.7% and 2.9% in 1999 and 2000 respectively.

As net exports have become a drag on growth in many industrial countries, the West has increasingly relied on domestic demand to support overall growth. A slump in the financial markets and a widespread credit crunch, which would undermine consumers' confidence and investment intentions, would therefore have plunged the global economy into recession. Although the recent normalisation in many financial markets has provided reasons for relief, events in Brazil have shown that the crisis is far from over and a return to trend growth may be delayed. Indeed, it is likely that in 1999 the OECD countries will witness rationalisation and restructuring in many industries such as steel, automotives and parts of the electronics and chemicals sector. Adjustment to over-capacity in these sectors world-wide is more likely to come in industrial countries than in the newly-industrialised regions. In the EU, this process may well be given an added impetus by the competitive pressures linked to the arrival of the euro.

This gloomy sentiment is reflected in the UK business surveys, which have shown a collapse in business confidence in recent months, compared to levels recorded in the previous recession. According to the CBI Industrial Trends Survey, confidence fell sharply in the latter half of 1998 - October, for instance, showed a more pessimistic reading than was recorded in the depths of

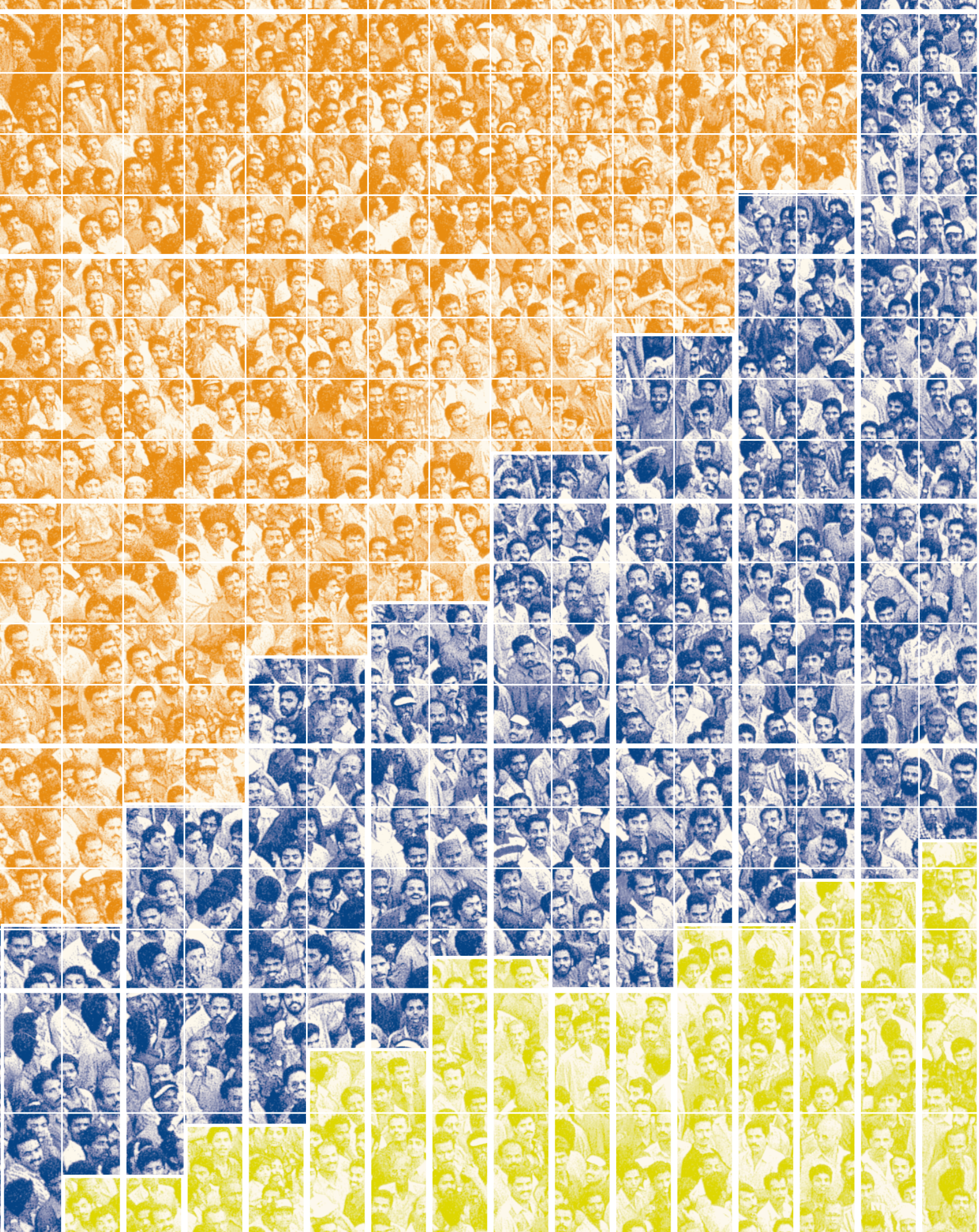
the 1990/91 recession. Firms were certainly influenced by gloomy media commentary, but a similar picture is also painted for consumer confidence about the general economic situation. Deterioration of this magnitude is not typical and suggests that a sharp slowdown is now in store during the coming months. The CBI has revised downward its growth forecasts from 1.2% to 0.7% for 1999, which includes zero growth for the first two quarters. Although the economy as a whole may just avoid a technical recession, manufacturers at least look set to face four more quarters of falling output, with related cuts in investment and jobs.

By cutting interest rates again in early January, the Bank of England

had in four months more than reversed the rises in interest rates introduced from May 1997 to June 1998. Yet there is still concern that this will not be able to ward off recession, in the face of these dire warnings concerning the economy. Economic weakness now seems to be spreading out well beyond manufacturing. Surveys of the service sector, including financial services, increasingly indicate that these firms are preparing for a sharp slowdown in demand growth. An outright recession in the UK seems unlikely, but a prolonged period of slow growth is probable, as the traded sector of the economy restructures.

Kate Barker is Chief Economist of the CBI.







Does inequality mean slow growth?

Timothy Besley and Robin Burgess challenge those who argue that inequality is the price of economic success in the modern world

One of the obsessions of late twentieth century society is economic growth: right across the world, politicians, economists and ordinary citizens, from rich countries and poor, all want to know how they can become better off. Growth is seen as a vital measure of economic success and a huge amount of research effort is expended in trying to work out what makes economies grow – and how to make them grow even faster.

For much of this century, redistribution – ensuring that everyone became better off – was seen as an important element in measuring economic success. But in the 1980s in particular, it became fashionable for some politicians and economists to argue that inequality could be positively good for growth. In Thatcherite Britain, the economy and its productiveness grew at a time when inequality (as measured by the gap between the very richest and the very poorest) increased sharply. The one seemed to be a price for the other. President Reagan came to office in the US in 1981 armed with the so-called *trickle down* theory: let rich people get richer and everyone would benefit as their wealth 'trickled down' the economic ladder.

In Britain, then, economic success as measured by the growth in the economy appears to have been bought at the price of greater inequality. But does economic inequality within a country really provide the best framework for economic growth in the future? Does inequality spur growth or hinder it as some recent research suggests? These are questions at the heart of modern government policy. Should countries be thinking in terms of dismantling their welfare states because greater inequality would

promote growth; or improving the redistribution of income and wealth because the reverse is true?

Even the theory is changing

Inequality and growth are inextricably linked. The distinguished British economist Nicholas Kaldor observed that those who owned capital tend to be richer than those who rely exclusively on labour for their incomes: this suggested that savings out of capital income should exceed savings out of labour income. In this way the rich would grow relatively richer; increases in income inequality would result in higher savings, and, if these savings were then invested in a productive way, would subsequently lead to higher growth. In other words, more unequal societies were likely to grow faster.

Neither a borrower nor a lender be?

Recent work on this link has focused on two different channels by which inequality affects growth. The first is a result of what are known as *agency* problems. These arise when one or more individuals contract with one another under conditions of imperfect information. Take, for example, an investor who knows about a good investment opportunity, but hasn't the money to take advantage of it: that person needs, therefore, to borrow money from someone else. It is reasonable to suppose our borrower knows more about the investment opportunity than the person making the loan. It is also difficult for the lender to check whether the borrower has been sufficiently careful – with money that at the end of the day belongs to someone else – in watching over the investment: this is known as the problem of *moral hazard*. After all, the lender will enjoy part



In the 1980s in particular, it became fashionable for some politicians and economists to argue that inequality could be positively good for growth.

of the return on the investment – he or she will be repaid with interest if it is a successful venture; the borrower therefore has less incentive to make it work than if none of the money was borrowed.

If such imperfections in contracting relationships abound, then inequality can affect levels of output. To see this, contrast a world in which individuals decide to finance new investment projects out of their own resources and those where they must resort to bank lending. At one extreme, none of the agency problems outlined above will arise – the investor and the financier are one and the same. At the other extreme, the investor has no resources to commit to the project: ultimately the lender is taking all the risk, and doing so on the basis of imperfect information. Some of these investments will go wrong – they won't produce a return on the money invested. The more of their own money which investors put into a project, the better the return is likely to be. The more equal a society is, the more likely it is potential investors will be able to offer sufficient collateral from their own resources to mitigate these agency problems. This suggests that, other things being the same, more equal societies should find better investment opportunities and thus grow more.

In other words, it is quite possible that societies which embark on a policy of wholesale redistribution could reap

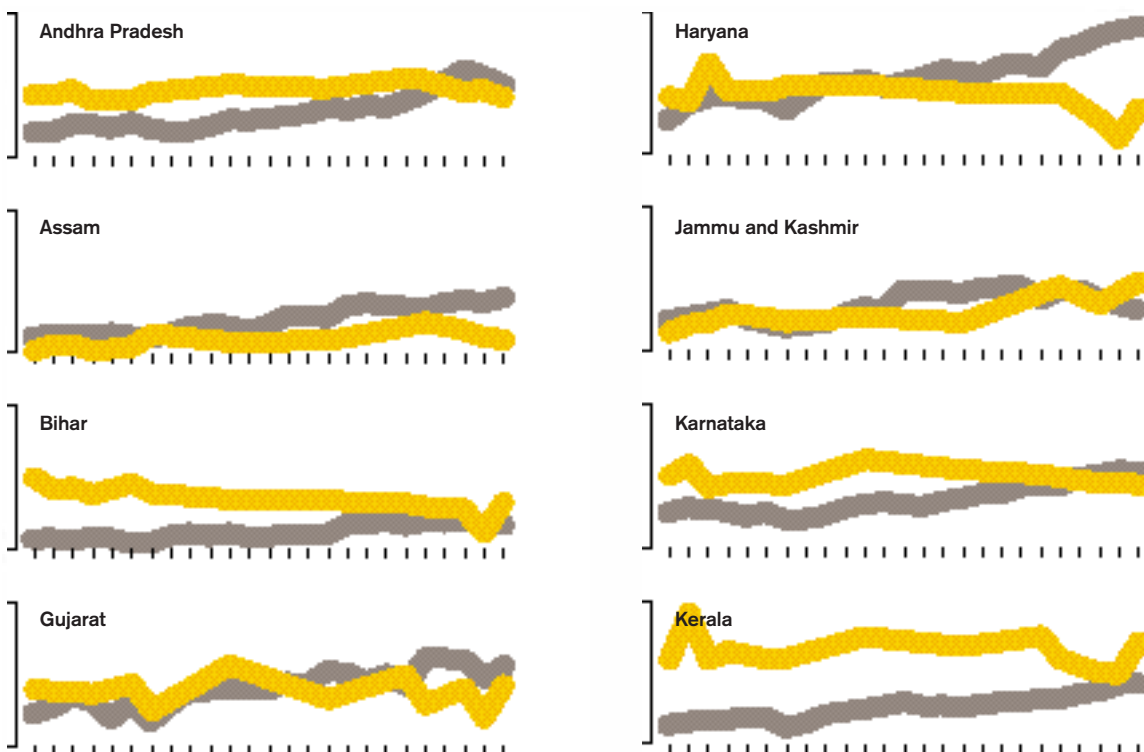
the reward in the form of higher output. Far from being seen as a drag on economic performance, the modern welfare state can therefore be seen as a vital mechanism which fosters growth.

The political impact of inequality

Other recent work has emphasised the impact of inequality on growth through the political system. Extreme inequality can foster all manner of activities – riots, protests and so on – which disrupt production. In a democracy, the level of taxation is determined by voting decisions and redistributive taxation is often conceived as the legitimate mechanism by which inequality is reduced. The more unequal the society the greater will be the range of opinion about the desirability of redistribution.

Take a country comprised of three groups – poor, middle class and rich. The poor in an unequal society see large gains from high taxation on the rich. The rich fear higher taxes if the poor gain political control. Many voting theories suggest that such conflicts will often be resolved by what the middle classes want – they represent a compromise that should be voted for ahead of the preferred outcome of either the poor or the rich. How much the middle classes will want to redistribute depends, first, on their own income level – whether they are closer to being rich or poor – and,

Figure 1 Difference between rural and urban poverty plotted against land reform activity
 ■ poverty ■ land reform activity



Does economic inequality within a country really provide the best framework for economic growth in the future? Does inequality spur growth or hinder it as some recent research suggests?



second, how much they are likely to gain levying taxes on the rich – which would depend on how rich the rich really are, and how successfully they can avoid higher taxes. The larger the gap between the middle class and the rich, the higher the levels of redistributive taxation the middle classes are likely to vote for. But these levels of taxation will affect incentives to invest and could have a negative impact of growth.

Does the evidence support the theory?

Both these theoretical arguments suggest that inequality at the outset is bad for growth. But how do they relate to the real world? Much effort has been expended over the last few years in trying to bridge the gap between the far reaching implications of the theoretical literature and the much more limited empirical evidence actually available to test the theories.

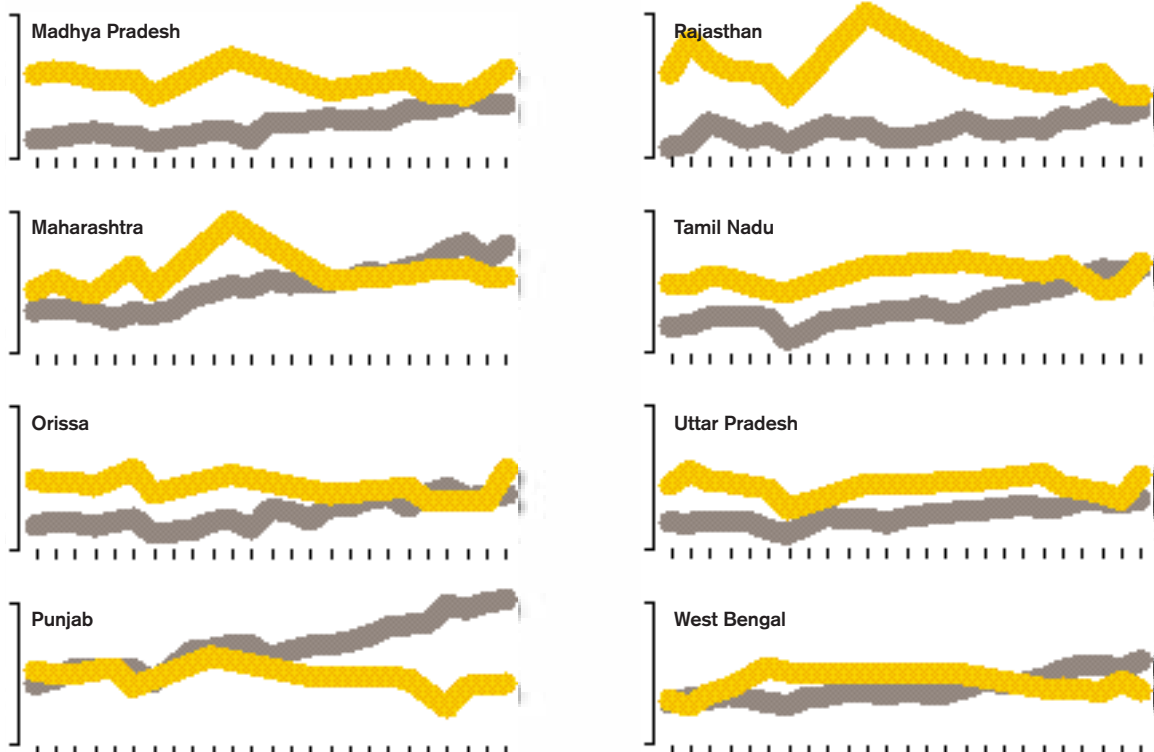
Most existing empirical evidence comes from cross-country data. While this can be informative, there are significant problems in trying to compare data across countries and in trying to work out the directions of causation. But it's possible to supplement such data with evidence with data from one country, India, where data on the distribution has been collected in a similar fashion in each Indian state over a long period of time.

Measuring inequality

Using the data available to construct measures of inequality over time – the most complete cross-country data covers 49 countries for the period 1947-94 – reveals two key features. First, levels of inequality vary significantly across different countries: they are highest in Latin America and sub-Saharan Africa and lowest in the industrial countries of the OECD, with the countries of East and South Asia somewhere in the middle. The range of variation is smaller across Indian states during the 1958 – 1992 period, but is nonetheless considerable.

Secondly, the evidence suggests that inequality measures *within* countries or regions are relatively stable across time. Thus we find that 91.8 % of the variance is cross-country variance whilst only 0.85 % is over-time variance. For India, the figures are 65.2 % variance across states and 9.3 % over-time. The fact that inequality has been relatively stable across time whereas different countries and states have been growing at different rates over the same period suggests that there is no systematic relationship between inequality and income. This is demonstrated graphically for Indian states in Figure 1.

But the relative stability of income distributions across time does not mean public policy is neutral in its impact on growth and poverty: there may be direct effects, but there





It is quite possible that societies which embark on a policy of wholesale redistribution could reap the reward in the form of higher output. Far from being seen as a drag on economic performance, the modern welfare state can therefore be seen as a vital mechanism which fosters growth.

may also be a lot of changes taking place *within* a distribution which are not immediately apparent. Understanding how particular forms of redistribution affect economic performance and welfare is therefore crucial.

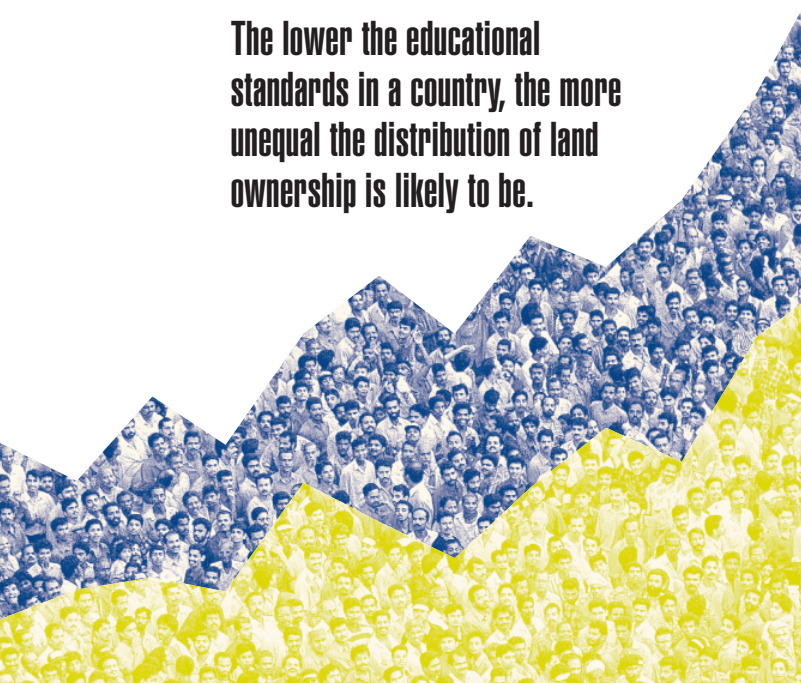
Inequality matters

So far most of the work has concentrated on how *initial* inequality (in other words, the level of inequality at whatever point we choose to start from and which is itself the result of historical policy choices) affects economic performance. The level of initial inequality is thus viewed as a potential determinant of growth. Overall, these cross-country studies suggest that initial inequality depresses subsequent growth and investment. This suggests that countries which pursued policies to equalise incomes did reap some benefit in terms of future growth. But this relationship is relatively weak. The negative effect of initial inequality on growth is stronger if we use as a measure inequality in the form of assets (such as land, for example) in place of income. How inequality is measured is therefore crucial – and this has a direct bearing on how to choose the most appropriate policy to affect it. The distribution of assets (whether physical or human) which strongly affect earning potential over the life cycle seem to be a more important determinant of the future economic performance of a country than the distribution of current income.

But how?

The central question remains: what is the mechanism through which an unequal initial distribution of assets or

The lower the educational standards in a country, the more unequal the distribution of land ownership is likely to be.



income might affect subsequent growth? If it is political – that poor people may vote in favour of redistributive taxes that reduce investment incentives – then we would expect three things: higher taxes and lower investment in democratic as opposed to undemocratic countries; a positive relationship between inequality and redistribution; and a negative effect on growth from redistribution (using welfare transfers and education expenditure as proxies). None of these relationships are borne out in cross-country data.

Not all redistribution is equal

The suggestion from the data that certain forms of redistribution can increase output more than others represents a shift away from the presumption that all forms of government intervention in the economy entail a trade-off between equity and efficiency. Where access to credit is conditional on ownership of assets, and if certain investments in physical or human capital (for example, in basic education) are affected by individuals' access to credit markets, then the distribution of assets in an economy, in addition to the average income, will determine how many people are able to undertake such investments.

The more unequal the economy, the fewer the number of people able to make such investments in physical or human capital: which would result in lower stocks of such capital and, as a consequence, lower growth. Three pieces of evidence from the cross-country data provide support for this line of argument. First, increasing credit availability and redistribution (for example, of human capital or physical assets) tend to increase growth. Second, the negative impact of initial inequality (measured by ownership of land) on subsequent growth can be identified in developing but not in developed countries. This makes sense given that credit constraints are less important in developed countries, land is no longer important as a form of collateral, and poverty is rarely a reason for non-attendance at primary schools.

Finally, it appears that initial (land) inequality is significantly and negatively related to the average educational attainment in the population. The lower the educational standards in a country, the more unequal the distribution of land ownership is likely to be. Taken together, these observations suggest that the credit markets, not the political system, are more likely to be the mechanism through which inequality slows economic growth.

Redistributive policy

So what are the implications of all this for policymakers? Research is now concentrated on three aspects of this debate. There is an increasing preoccupation with how particular forms of redistribution, as opposed to inequality *per se*, affect growth. Different redistributive policies may

The distribution of assets (whether physical or human) which strongly affect earning potential over the life cycle seem to be a more important determinant of the future economic performance of a country than the distribution of current income.



have effects on growth (and poverty) which are independent of the overall level of inequality. There is also a shift away from using cross-country data because of the difficulty of making sensible comparisons between different measures of inequality. Data on regions within a given country where data has been gathered in a consistent fashion and where there are fewer problems in comparing across institutions and types of state intervention often offer the best way forward. And there is an increasing tendency to look at the effects of a particular form of redistribution on both growth and poverty. This is driven by recognition that a given intervention may have different effects on poverty and growth and the pattern of effects may vary by type of intervention.

Taking this tack allows us to begin to rethink the design of redistributive policy. The challenge is to identify those forms of government intervention which improve both economic performance and improve welfare. These tend to be those that *redistribute opportunity* (in terms of access to basic health and education and the acquisition of assets, credit and employment) thus allowing individuals or households to participate more fully in the economy. This new thinking partly explains why there has, in developing countries, been a shift away from tax/transfer programmes towards land reform, promotion of small-scale industry, expansion of basic health and education and micro-lending as the major focus of redistributive efforts.

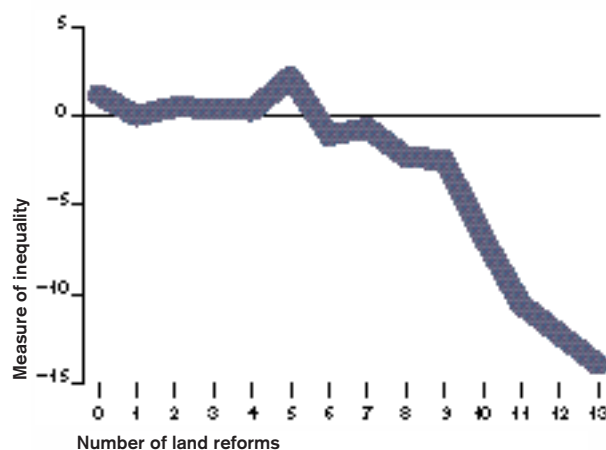
Land reform in India

India offers an excellent chance to study how such approaches can work in practice; the progress of land reform there is particularly illuminating. Data on poverty and inequality have been gathered over a long period in India, using the same methods in each state. The states also have a great deal of autonomy and have been free to introduce different forms of land reform, with significant variation across states and time. And besides being home to a significant fraction of the poor in the developing world, India, in the post-Independence period, experienced the most extensive land reform legislation ever to have been passed in so short a period in any country.

We found that states with more land reforms have experienced greater reductions in rural poverty. This is clearly illustrated in Figure 2: the vertical axis shows a measure of the difference between rural and urban poverty, while the horizontal axis gives the number of land reforms that a state has in a particular year and state. Using the *difference* between rural and urban poverty is a particularly persuasive way of looking at the data since, unlike the level of poverty, there is no downward trend over time in this variable. Hence, we can be sure that land reform is not just picking up a trend linked to a specific state.

Perhaps even more interesting is that the pattern of effects on poverty and growth were mixed across different types

Figure 2 Difference between rural and urban poverty plotted against land reform activity



of land reform. There was some suggestion of an equity-efficiency trade-off for tenancy reforms (which involved changing the terms of the contract between landlord and tenant) since both poverty and output per capita are lower after such reforms have been introduced. No such trade-off emerges for the abolition of intermediaries (sub-landlords which extracted tax for the British and rent for the landlord) – poverty is reduced but growth is unaffected. Ceilings on land holdings (where land holdings above the stipulated ceiling are redistributed) do not seem to have an effect on either output measures or poverty, while land consolidation (where disparate plots are amalgamated) promotes output increases in agriculture without having any impact on poverty.

The challenge for the future

It seems clear, contrary to some hitherto fashionable ideas, that inequality can have a deleterious impact on growth prospects both in the developed and the developing world. The challenge is to identify those policies which have the best chance of achieving both objectives – faster growth and less inequality – at the same time.

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Weightless Property

Property rights underly the workings of almost all economic life. In the weightless economy, however, property is intellectual property – not the same as scientific knowledge, perhaps, but intellectual property nonetheless, in having all the same physical and economic properties as knowledge. What difference does this make to economic performance? In his regular column **Danny Tyson Quah** asserts the changes will be large, and lays out some of the economic reasoning behind decisions that societies will need to make.



In almost every area of economic activity, being clear on who owns what is a pretty effective way to guarantee reasonable outcomes. Property rights provide incentives for ensuring the continued production and distribution of goods and services that society values. Indeed, some identify the mainspring of economic growth to be property rights which make socially productive activity worthwhile.

Less grandiose examples abound. Those owning their own homes maintain the property better than those renting a hotel room; those driving their own cars take better

care than when driving a rental. When employees run the business – whether it is Britain's John Lewis chain of retail stores or a family-run corner shop – chances are they will have the greater incentive to make the business succeed, by working harder or being more ingenious at solving the day-to-day problems that come up. Shirking is reduced; gains and losses are made transparent.

The logic extends more generally. Households that form part of a coherent community watch out for the well-being of everyone in the community. Engineers with stock options in a software company are

Danny Tyson Quah

Some identify the mainspring of economic growth to be property rights which make socially productive activity worthwhile.

driven to work hundreds of hours a week to guarantee delivery of a successful product. Firms and workers that have a stake in society are supposed to perform better all around: by not littering city streets; by contributing charitably to the museums, opera, and ballet; by fighting the temptation to succumb to road rage.

Property is property

This alignment of actions and incentives makes so much sense that it pervades thinking even where its utility might be less clearcut. Slap the word intellectual in front of property rights: why should anything change?

Intellectual property rights (IPRs) increasingly form the touchstone of success in the weightless economy. IPR activity here ranges from the grab for namespace on the World Wide Web to US TRIPS (Trade-Related aspects of Intellectual Property Right) litigation to the software industry's estimated worldwide loss of US\$1.4 billion in 1997 from illegal software copying. While US retailing loses less than 2% of total sales from shoplifting, bootlegged business software in the US alone costs that industry over 25% of sales. That figure is 32% in Japan and 96% in China (making for dollar losses of US\$0.8 billion and US\$1.4 billion, respectively, in 1997).

Two forces are at work here. First, it is the nature of weightless economy products that they can be easily copied. But copying alone need not be enough. Having a copy of the music, video, or electronic game on disk without being able to use it doesn't do the consumer much good (and there are many more consumers than there are businesses). So, the second: technology now facilitates the consumption and use of weightless-economy products to a degree where their easy copying actually makes a perceptible economic difference.

The end result is, as Thomas

Jefferson two centuries ago saw, not of computer software or pop music, but of knowledge and ideas: that they are "incapable of confinement or exclusive appropriation", or are infinitely expansible – the classical IPR problem. But while Thomas Jefferson and earlier writers could confine these worries to the relatively remote realms of the inventor, then, factory-floor innovation, and much later to R&D labs, the weightless economy takes them directly to the consumer. It might irk purists that I say the Beastie Boys and the Spice Girls generate intellectual property, but it's true – in that their weightless-economy output has all the same physical and economic properties as does scientific knowledge. The same goes for computer software, video games, movies.

The IPR problem is therefore intensified in the weightless economy. With intellectual property rights at best insecure, what remains of incentive to develop and maintain intellectual assets? Proponents for stronger IPR regimes go further: for them, the current system not only destroys the will to innovate, it also reduces R&D resources overall and depletes tax revenues. These arguments make their case on behalf of gains for society as a whole. But narrower, less altruistic ones can be developed. If the British medical establishment is averse on grounds of "morality" to patenting its discoveries, then American business is more than willing to do so. Perversely, we then end up paying to use something that was ours in the first place.

There's a trade-off

Whether or not morality means anything, certain types of intellectual property do differ from property more generally.

To decide if society enjoys enough economic activity of a particular kind, we weigh up marginal benefits and marginal costs. When the former exceeds the latter, society will gain

With intellectual property rights at best insecure, what remains of incentive to develop and maintain intellectual assets?

when there is more of the activity in question. We can apply this principle to agricultural production, the manufacturing sector, the Spice Girls, even the number of academics working in economics departments. For infinitely expansible intellectual property, marginal costs are zero *ex post*, i.e., immediately after its initial creation. But then as long as society continues to benefit from having yet another copy of that asset, we should instruct the owners of an intellectual asset to flood the market with their asset at zero price.

Wholesale expropriation is one way to describe this, but unfettered competition would work too. The different phrases, of course, give entirely different spins on, in this case, exactly the same outcome.

The obvious problem arises once one thinks through the dynamics. Forward-looking putative creators of intellectual assets see that expropriation is what will happen, and, sensibly enough, demur. What is good for society *ex post* is not similarly so for the individual *ex ante*. Creative people will find plenty of other uses for their time and energy. The result: no intellectual assets are produced.

To get around this, systems of intellectual property rights prevent unfettered competition by awarding a monopoly to the private creator of an intellectual asset. Any effective IPR system necessarily reflects a choice society has made about the trade-off between *ex ante* incentives and *ex post* inefficiencies. Those arguing for strong IPR protection must estimate *ex post* inefficiencies to be relatively unimportant; those agitating for weak IPR protection must believe *ex ante* incentives will be relatively undiminished. Unlike property rights in many other areas of economic life, intellectual property rights are not an unalloyed good thing.

This observation has unexpected implications. For one, it lends circumspection to policy-makers'

While US retailing loses less than 2% of total sales from shoplifting, bootlegged business software in the US alone costs that industry over 25% of sales.

using patent counts and copyright licensing revenues to measure economic performance. Observed patterns of patent renewals and patent/R&D expenditure ratios could well give insight on how valuable and effective intellectual property and R&D are to an individual firm. They give no insight, however, on national economic performance: are consumer and producer welfare jointly maximized? In the reasoning above, higher patent counts simply mean ever greater social inefficiencies, and thus reduced consumer surplus.

Almost by definition, then, there cannot be one absolutely unambiguous and definitive argument for strengthening regimes for protecting intellectual property rights. Or for weakening them.

The real world

But what about the specifics? Most official intellectual property takes the form of copyright and patents. Software has, historically, been protected by copyright, not patent. Software is, therefore, legally the same as a literary work. Copyright protects an author's expression of an underlying set of ideas, but not the ideas themselves. Under most current legal systems, copyright is routinely awarded to any work showing originality, i.e., the work must not have been copied, and must have had sufficient amount of labour, skill, and judgement involved in its production. Put differently, the work must have been the author's own creation.

Implicit in this is the understanding that there must be more than one way to implement an idea – for otherwise any copyrighted work could not have been the author's own creation. Indeed, under copyright, others can freely copy portions of a work that are "critical", i.e., for which only one way exists to implement the idea. In principle then, except through sheer bulk of overlaying detail,

good ideas do not get held up by copyright monopoly.

Easy enough for me to say lightly. But Hollywood and the publishing, arts, and software industries on the one hand and consumer advocates on the other take copyright protection very seriously indeed. To the degree that economic growth continues to be driven by technology – as it always has been – and to the extent that new technology more and more appears in copyrighted (not patented) software, ordinary copyright protection might not be strong enough for society's own good.

Or too strong, depending on how you look at it. Consumers are not concerned the same way rival producers are about being able to extract, for their own use, the critical good idea embedded in a copyright work but unprotected by law. Consumers just want to enjoy the entire work conveniently. This act is impossible to perform without, in effect, making a copy – albeit temporarily – and thus infringing the rights of reproduction on a copyright work.

Patents differ from copyright in requiring that an invention be novel, capable of industrial application, and innovative relative to the current state of the art; they are therefore a stronger form of intellectual property protection than copyright. The definition seems to exclude, say, mathematical formulas and abstract models, and as already noted, computer software historically.

But the underlying bases for legal decisions can drift as understanding changes, even when sometimes the resulting economic benefits might not be completely transparent. By the late 1980s, the Karmakar linear programming algorithm had become, in effect, protected by patent. In 1998 the US Patent and Trademark Office began awarding patents for electronic-commerce business models, reasoning they were performed on computers and thus

There cannot be one absolutely unambiguous and definitive argument for strengthening regimes for protecting intellectual property rights.

were industrial, machine-driven processes. Indeed, a recent decision awarded a patent to, essentially, a mathematical formula for dividing up administrative costs on a portfolio of mutual funds. Because the formula was computerized – the computer was made part of the invention – and since US law allows patenting of the entire package, a mathematical idea has in effect been accorded patent protection.

The bottom line

With ongoing progress in Internet delivery and weightless economy technology, it becomes increasingly important to understand how systems of intellectual property rights affect economic performance. I have here touched on only the most basic of economic issues, but ones that often seem forgotten in the rush to digest a morass of IPR detail.

The notion of intellectual property protection has always been slippery, and will likely become still more so. However, without appreciating its proper role in the workings of an economy, we are left with little but post-modernist deconstruction of fun, altruism, and identity in an electronic community. Or, at the other extreme, we get mindless parroting of simplistic economic clichés. Neither mushiness seems to me the right way to go about building a modern economy.

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CentrePiece

Prize Draw Winners

The last issue of CentrePiece carried a readers' survey: respondents' names were entered in a prize draw, and the following readers won copies of Mad Money by Susan Strange.

Ms Carine Verwimp
of London SW1

Ms Loretta Reehill
of Barons Court, London

Mr David Grubb
of the OECD in Paris

Mr Hans Liesner
of Hatfield in Herts

Ms Ruth Frost
of Call Centre Technology
in London EC4

prize draw



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