

Centre Piece

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Inside this issue: **CRIME AND LOW PAY**

The Path to Profit

BHOK!

PUNK!

DIE!

BAK!

WONK!

WOB!

BOARDROOM



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Editor's note

For the last CentrePiece of the year and the millennium we have an appropriate mix of articles: some look back, trying to understand changes which have taken place; the majority look forward, reporting on cutting-edge research which has important lessons for policymakers.

The argument about why British industry performed so disappointingly in the second half of this century is a long-running one; and it's a subject we've touched on in CentrePiece before. Now Geoffrey Owen sets out his views which represent several years of research at the CEP. Attitudes to Europe played a crucial part, he argues.

But Michael West and his colleagues have discovered other important factors affecting the success of companies. How a company's top managers work together can have a major impact on profitability: their research specifically relates to the large on-going survey of small and medium-size manufacturing companies in the UK: but we can all think of much bigger companies which have been harmed by poor teamwork at the top!

David Marsden argues that the open-ended contractual relationship between most firms and their workers is now due for an overhaul as work patterns change. He offers some suggestions for how a new relationship might work. Rachel Griffith, Stephen Redding and John Van Reenen also have prescriptions to offer. Their research has shown that increased spending on R&D can bring big rewards for economies trying to close the productivity gap: not just by improving innovation performance but by helping firms and economies to copy technological leaders more effectively. On a less optimistic note, Stephen Machin and Costas Meghir report on their findings that there is a clear link between the incidence of crime and low pay.

Our Guest Columnist, Peter Kenen, writes about the prospects for the new international financial architecture in the wake of discussions at the Cologne summit this summer. This is an area of considerable interest for the Centre for Economic Performance: we held the second of a series of major international gatherings on this subject in July and some of the papers from that meeting will be published shortly.

Last, but hardly least, Danny Quah offers some reflections on the internet in his regular column on the Weightless Economy. It's worth remembering that when this column started nearly four years ago, there were some raised eyebrows: no-one doubts the extent to which the Net is changing the way we live and the way economies operate.

CentrePiece plans to continue to be at the forefront of economic thinking in the next millennium. Don't forget to let us have your views, by e-mail or by post, to the address on this page.

Graham Ingham

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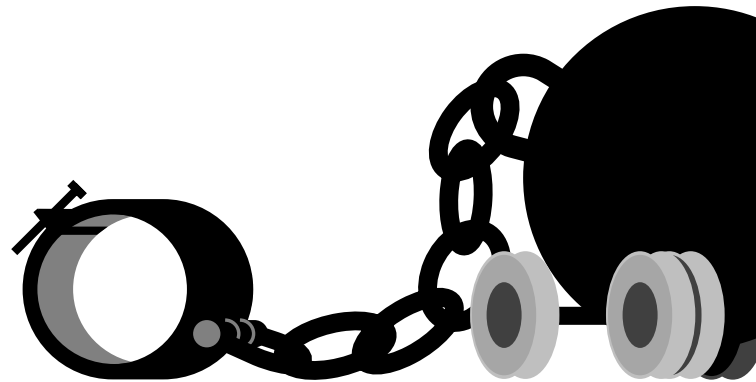
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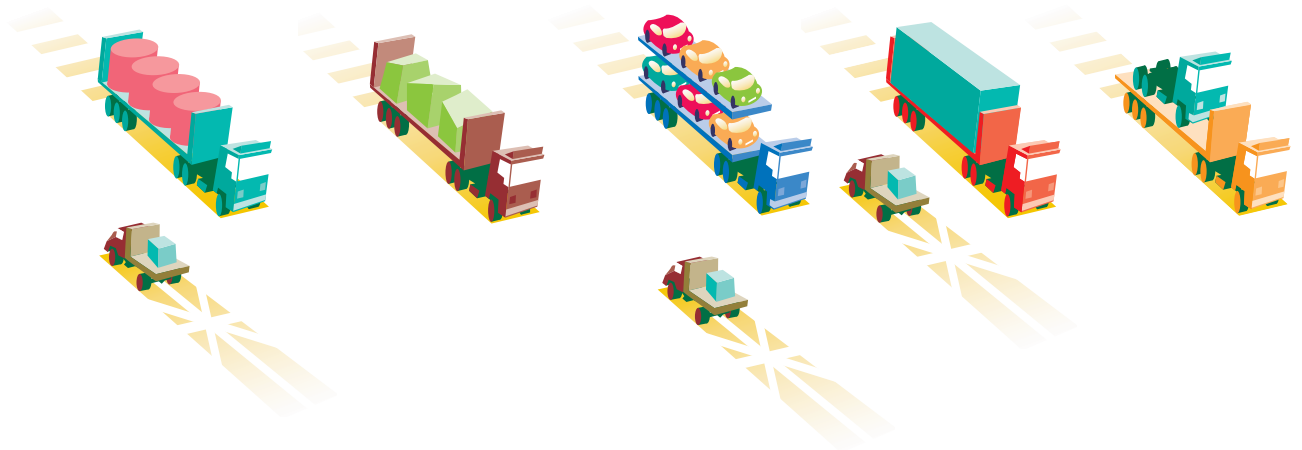
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In his regular column, DANNY QUAH looks at trade-offs on the Net.



From Empire to Europe

The delayed Europeanisation of British industry

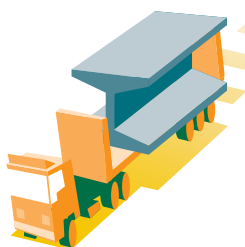


By the standards of its international competitors, Britain's industrial performance after 1945 was poor – industry was slow to change and to recognise the need to compete. But change did finally come. In his new book, the CEP's Geoffrey Owen analyses why and how that change came about. Here he sets the scene.



by Geoffrey Owen

One of the more remarkable business stories of the last decade has been the emergence of the British Steel Corporation as one of the world's leading steelmakers. This company was in a parlous state at the end of the 1970s, making heavy losses and lagging far behind its Continental counterparts in productivity. The revival which began at that time involved a ruthless attack on overmanning and a concentration of output in the most efficient plants. Another aspect of the recovery was a strenuous effort to build a stronger market position in Continental Europe. The recently announced merger with Hoogovens, the Dutch steel producer, forms part of this strategy; the combined group will be slightly larger than its main European rivals, Thyssen Krupp in Germany, Usinor in France and Luxembourg-based Arbed.



Learning the hard way

British Steel's experience, though exceptional in some respects, illustrates in microcosm the transition which British manufacturing as a whole has gone through since the second world war – from protection to competition, and from Empire to Europe.

Between 1945 and 1967, when the industry was nationalised, British steelmakers were operating within a regulatory framework which had been established in the early 1930s, after the abandonment of free trade. Imports were strictly controlled, and prices were set by a government agency, the Iron and Steel Board. Most of the industry's overseas sales went to the Commonwealth and other sterling area countries. Interest in continental Europe, either as a market for exports or as a source of raw materials, was minimal, and this was reflected in the Attlee government's decision, taken in 1950, not to join the European Coal and Steel Community. The idea that exposure to intra-European trade might make the industry more efficient was not seriously entertained, and this was as true of Conservative governments in the 1950s as of their Labour predecessors.

The next step was nationalisation, which had the effect of insulating the industry from commercial pressures and of making it even more vulnerable to political intervention. One consequence was an over-ambitious expansion strategy

(approved by a Conservative government in 1973), when an incremental programme of efficiency improvement would have been more appropriate. There is also not much doubt that state ownership made British Steel slower to respond to the mid-1970s worldwide slump in steel demand than a private-sector industry would have been. All this coincided with Britain's entry into the Common Market, leading to a rapid and sustained increase in imports from the continent.

What was needed was a drastic reorientation of strategy, focussing on lower costs and higher quality, which would enable British Steel both to retain a respectable share of the British market and to increase its sales in what was now seen as overwhelmingly the most important outlet for exports, continental Europe. The 1980s began with a three-month strike, the outcome of which established the principle, insisted on by British Steel management, that wage increases would in future be tied to productivity improvements at plant level. Over the next few years profits steadily improved to the point where British Steel could be successfully privatised. Although the company's financial performance since privatisation has been poor (partly because of the over-valuation of sterling in the early 1990s and again towards the end of the decade), British Steel remains at or near the top of the European productivity league.

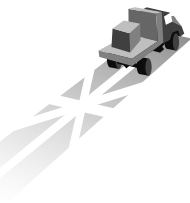


Industrial isolation...

Two important strands in this story are the costs of non-involvement in Europe and the damage caused by misguided government intervention. There are clear parallels with the motor industry. British car and truck manufacturers missed out

on the spectacular expansion of intra-European trade during the 1950s and 1960s. These were the years in which Volkswagen and Renault surged past the British Motor Corporation in output, exports and productivity. Following the creation of the Common Market in 1958, the two continental companies were competing in a fast-growing, increasingly integrated market, comparable in size to that of the US. The British industry was largely isolated from this process. Until the mid-1960s the bulk of its exports went to non-European destinations, while the home market was heavily protected. As late as 1970, when tariffs between Britain and the EEC had been substantially

The idea that exposure to intra-European trade might make the industry more efficient was not seriously entertained, and this was as true of Conservative governments in the 1950s as of their Labour predecessors.



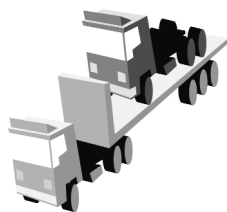
It would be absurd to suggest that all Britain's industrial problems would have been solved if governments and companies had taken Europe more seriously in the early post-war years.

Table 1 Import penetration in cars in West Germany and Britain 1955-70 (percentage of car sales supplied by imports in each country)

	Britain	West Germany
1955	2.2	4.1
1960	7.1	19.0
1965	5.0	18.1
1970	14.4	31.3

Source: Society of Motor Manufacturers and Traders, Verband der Automobilindustrie

reduced through the GATT negotiations, imports accounted for only 14% of the British car market, compared with 31% in Germany (see Table 1 above).



...and government interference

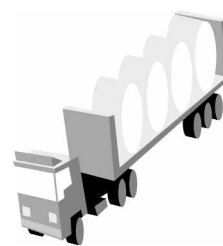
In 1968, the year after British Steel was nationalised, the British motor industry was subjected to a government-induced reorganisation – the merger between British Motor Holdings (BMH) and Leyland

Motors to form the British Leyland Motor Corporation – which had disastrous consequences. The merger made the existing problems at BMH harder to solve, and damaged the healthier parts of the group such as Leyland trucks and Jaguar cars. The error was then compounded by the government rescue in 1975. As a state-owned enterprise, British Leyland was allowed to pursue an unrealistic strategy, seeking to compete in all sectors of the car market at a time when specialisation might have provided a viable basis for survival. At the end of the 1970s the company was virtually bankrupt.

In this case, unlike steel, rehabilitation required the help of a foreign partner – first Honda, brought in as a collaborator on new product development in the early 1980s, and then BMW, which acquired what was left of British Leyland, now called Rover, in 1997. A central problem throughout this period has been the company's weakness in continental Europe. The big challenge for BMW is to develop a new range of up-market cars which will establish Rover for the first time as a serious contender in Europe; the new R75, built at Cowley and launched earlier this year, is a promising start.

On the truck side, too, the British motor industry paid a heavy price for its neglect of Europe in the early post-war decades. Leyland, the leading producer of heavy trucks, concentrated almost entirely on Commonwealth and

sterling area customers, and was wholly unprepared for the opening-up of the European market in the 1970s. The home market was invaded by such companies as Volvo, Scania and Mercedes-Benz, and Leyland did not have suitable vehicles with which to launch a counter-attack. The sale of Leyland to DAF of the Netherlands in 1988 was a belated recognition of the need for a European dimension, but by that time a great deal of ground had been lost, and DAF itself was a weak player in an over-crowded market. Both Leyland and DAF are now owned by Paccar, the American truck manufacturer.



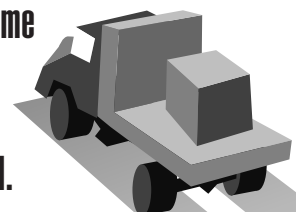
The benefits of competition

Paper-making is another industry which illustrates the transition from Empire to Europe. For the first fifteen years after the war British paper companies were operating in a protected home market, and they had a

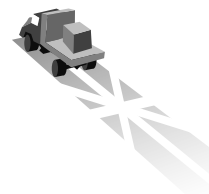
small but profitable export trade with the Commonwealth. Then, at the end of the 1950s, came the shock of the European Free Trade Area (EFTA), which exposed them to competition from countries that had cost and raw material advantages in paper-making, principally Sweden and Finland. During the 1960s and 1970s the industry struggled to come to terms with a difficult trading environment, as it looked for sectors of the market in which UK-based producers, lacking access to large forests, could build a viable business. The two biggest British paper companies, Reed and Bowater, became increasingly dubious about the future of the UK paper-making operations, and started diversifying in other directions.

What then ensued, in the 1980s and 1990s, is one of the unsung success stories of British business. For a mixture of reasons, including technical advances in the use of waste paper as a substitute for imported woodpulp, the prospects for paper-making in Britain looked rather better than they had seemed in the depths of post-EFTA gloom. At the same time the Thatcher government's reforms were making the UK a more attractive target for foreign investment. These developments helped to set in train an extraordinary transformation of the industry, involving changes in

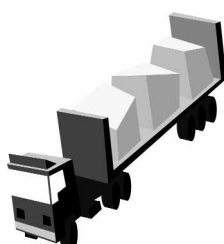
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The lack of enthusiasm for competition was most marked under Labour governments, but the Conservative record in the field of industrial policy – before 1979 – is not a glorious one.



ownership, the construction of new mills and a marked improvement in productivity. Reed and Bowater withdrew from UK paper-making, and their places were taken by foreign, mainly European, companies which were prepared to invest on a substantial scale in British mills. In 1967 the ten top British paper-makers were all British-owned; thirty years later only two of the top ten were wholly British. Over the same period exports rose from less than 10 per cent of production to nearly a quarter, with almost all the increase coming from continental Europe.



Taking Europe seriously

It would be absurd to suggest that all Britain's industrial problems would have been solved if governments and companies had taken Europe more seriously in the early post-war years, and if entry into the Common Market had come in

1958 rather than in 1973. But German and French experience suggests that intra-European trade was a powerful force for modernisation and rationalisation, and that, if Britain had been part of this process, some of the changes which took place in the 1980s would have occurred much earlier. The French example is particularly striking. As Table 2 below shows, the share of France's exports going to the former French colonies fell from 42% in 1952 to 13.5% in 1968, and this was almost exactly matched the increase in exports to fellow members of the "Six". This competitive stimulus was far more important to France's economic revival than indicative planning or industrial policy, both of which were grossly over-praised in Britain during the 1960s.

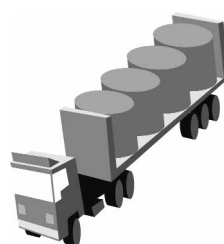
That European stimulus was missing in Britain, and its absence was compounded by domestic policies which tended to hold back industrial change in the interests of full employment and social peace. Two examples of such policies have already been mentioned – the nationalisation of steel and the rescue of British Leyland.

Table 2 Destination of French exports 1952-73 (percentage of total)

	Former French Colonies	Six EEC countries	Other OECD countries
1952	42.2	15.9	27.3
1958	37.5	22.2	24.4
1962	20.8	36.8	27.9
1968	13.5	43.0	27.0
1973	9.2	48.6	27.5

Source: W.J.Adams, *Restructuring the French economy*, Brookings 1979, p178

They were of a piece with other cases of government intervention – sometimes geared to the creation of national champions – the effect of which was to delay British industry's adjustment to international competition, and to waste a great deal of taxpayers' money in the process. The lack of enthusiasm for competition was most marked under Labour governments, but the Conservative record in the field of industrial policy – before 1979 – is not a glorious one.



Thatcherism's impact

The significance of Thatcherism was that the protective blanket was removed and British industry was forced to compete. With the partial exception of defence and aerospace, support for national champions was abandoned, and the Thatcher

government was more relaxed than its predecessors about allowing supposedly strategic industries to pass into foreign control; no objection was raised when ICL, the computer company, was sold to Fujitsu of Japan, or when Rover was sold to BMW. The outcome was a process of specialisation and internationalisation, as companies sought to concentrate on businesses which had a realistic chance of becoming internationally competitive, and withdrew from those which did not. In some industries, such as electronics, gaps left by uncompetitive British firms were partially filled by inward investment. The effect of Thatcherism was to accelerate British industry's integration into the world market and to remove obstacles which stood in the way.

"If only what happened to us in the 1980s had happened in the 1950s." This remark, made to me by a senior industrialist a few years ago, encapsulates the story of Britain's post-war industrial performance. To meet the challenge of the post-war world British industry had to break away from attitudes and management practices which had taken root under the protectionist policies of the inter-war years. But the incentive to make such changes was weaker than in West Germany or France, where the disasters of the preceding decade had created a climate much more conducive to radical reform of institutions and policies. There was also a political imperative for European integration which did not exist in Britain.

What was needed in Britain after 1945 was a pro-European Margaret Thatcher. Whether the political conditions would have allowed such a figure to emerge, just after the victorious conclusion of the war, is another matter.

Geoffrey Owen, formerly editor of the *Financial Times*, is a member of the Centre for Economic Performance and senior fellow at the LSE's Inter-disciplinary Institute of Management. His new book – *From Empire to Europe: the decline and recovery of British industry since the second world war* – is published by HarperCollins.

BHOK!

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A path to profit? Teamwork at the top

**How important is top management to the success of companies?
New research from the CEP suggests that the team at the top plays
a crucial role in company profitability.**

If the top management team members are well educated, all around similar ages and have worked together for a long time, the chances are that a company is relatively profitable. If these top executives also work well as a team, having clear objectives, high levels of participation, a commitment to excellence in their work and support innovation, the shareholders would have cause to be even happier. Indeed, our new research study shows that the composition and functioning of the top team account for a huge 43% of the variation between companies in profitability.

Education matters

The research, funded by the ESRC via the Centre for Economic Performance, has followed the performance of 160 UK manufacturing companies over the last 10 years. We gathered information from the top management team members about their backgrounds and their views of their teams' functioning and then related this information to the subsequent performance of the companies. We found that the best predictor of company profitability and, to a lesser extent, productivity, was the average educational level of

the team members. Educational level explained 19.4% of the variance in profitability in different firms and 11.4% of the variation in productivity.

Those management teams which included executives with higher educational levels performed best. We asked what qualifications team members had ranging from 'O' levels up to MBA and PhD. What made the most difference was at least some team members having a postgraduate qualification – a Master's level degree, a PhD or an MBA (Master of Business Administration) tended to be the most significant. This suggests that investment in MBAs may not simply be for window dressing but may make a very real and powerful difference to the performance of the individuals and their companies.

When we look at the frequency with which top team members have various qualifications we see (Figure 1 overleaf) that, even in the 42 relatively small manufacturing companies (those with an average size of 230 employees) included in our research, 24% of the sample of 237 top management team members had MBAs, Master's level



The more they share a 'world view' of the task, the easier it is for them to communicate, collaborate and co-ordinate their efforts and strategies.

Figure 1:

Educational qualifications of top management team members

No formal qualifications	1
'O' level; GCSE	20
'A' level; ONC	16
HND etc.	63
Graduate	75
Postgraduate	62
Total	237

Educational level of Managing Directors

'O' level; GCSE	1
'A' level; OND	1
HND etc.	8
Graduate	14
Postgraduate	6

degrees and PhDs. The proportion of people with postgraduate qualifications in these teams ranged from 0% (11 teams) to 75% (1 team), with an average of 27.2%.

But how?

There are two explanations for these very striking results. One is that the most intelligent people (who also happen to be those who succeed in acquiring high level educational qualifications) are simply better able to manage the challenges of running a modern business in a complex, demanding competitive environment. In the jargon of psychology, such managers have the cognitive capacity and flexibility to appraise and react appropriately to their complex environments. Alternatively, it could be that the specific training they receive in their MBAs, PhDs and Masters courses equips them with the specific technical and managerial skills required for them to do their jobs more effectively than their less well-educated colleagues – and make their companies the more profitable.

It could, of course, be a combination of both of these explanations. What we know is *not* the reason for our findings is that profitable companies can afford to hire the better educated (and therefore higher salary demanding) managers, since we controlled statistically for the size, sector and prior productivity and profitability of the firms in our study. This is all good news for Business Schools!

Too young or too old?

We also found that the more members of the top team differed in their ages, the worse the subsequent profitability

of their companies. This is a puzzling finding and one that could prompt a putsch of young and old top team members – an inappropriate response in our view. We speculate that what lies behind this finding has to do with the notion of shared mental models in teams: in other words, the extent to which team members share a similar view of the team's task in running the company, interpreting markets, meeting competition and formulating strategies. The more they share a 'world view' of the task, the easier it is for them to communicate, collaborate and co-ordinate their efforts and strategies. Where they have very different views of the world, they will be more likely to work at cross-purposes, conflict and compete with each other. And differences in ages are clearly associated with differences in worldviews.

People from different age groups have different emotional reactions too. Older people have more complex emotional experience (fewer black and white reactions), and tend too to cope with negative emotions better than younger people. Overall they tend to have more positive emotions than younger people and to look for different rewards from relationships. Older people seek continuity and stability in their relationships whereas younger people often seek more for stimulation. These diversities of mental models and emotions may lead to a failure of those from very different age groups to work together as effectively as teams of senior managers more closely linked in age to promote the profitability of their companies.

The longer the team had worked together, the more profitable was the company subsequently.



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.



Figure 2 Characteristics of top management teams

	Average	Minimum	Maximum
Size of team	7	4	15
Age of members	46	38	54
Members' time in organisation (months)	77	8	160
Members' time in industry (months)	187	32	378
Team tenure (months)	25	1	101
Percentage males	96	67	100
Percentage white	96	71	100

Learning the right lesson

This does not imply, of course, that we should construct only age-homogeneous teams. What we must do is train top team members to work effectively together to achieve shared understanding and to profit from, rather than waste, the innovative potential of integrating diverse perspectives and orientations. Indeed, our work with top management teams from a range of industrial sectors suggests they would benefit considerably from training in how to work effectively in teams.

This is well illustrated by our third important finding about the composition of the top team. The longer the team had worked together, the more profitable was the company subsequently. According to the Managing Directors of the companies we looked at, the average time the teams had been together was just over two years, with a range from one month to over 8 years (see Figure 2 above). Of course it might be that beyond a certain point this pattern would be reversed with teams becoming less effective as they became stale in their approach to their markets. But this is a question to be addressed in our further research.

Why should longer team tenure lead to better company performance? Again, we suspect it is to do with shared approaches to the world and established patterns of working efficiently together. Those who spend more time working together and who share a concern with ensuring improving company performance, find strategies for working together which lead to more effective collaboration and integration of efforts. By contrast, newcomers must learn the foibles of their colleagues and develop effective means of communication with them. These things take time and, until effective collaboration with colleagues is established, performance suffers.

It's likely anyway that the characters who make up these teams may be individualistic, achievement oriented and competitive – not necessarily the best qualities for team working. They have risen to the top of companies in male-dominated environments by dint of career tournaments. Putting aside the strivings for individual success to meet the needs of the company and its senior management team may not always be so easy. So working together over a

period of time may be necessary in order for them to 'fit' together as an effective team with shared objectives, inter-dependent working and a sense of collective responsibility and accountability.

Making a difference...

Together, these three factors (educational level, age diversity and team tenure) enabled us to predict nearly 18% of the variation between the companies in productivity and 37% of the variation between companies in profitability (see Figure 3 below). These are very large percentages of profitability to be able to account for and suggest the economic value of considering these factors carefully.

...or not

What didn't make any difference? The size of the team (the average was seven members but with a range from four to fifteen) didn't. Nor did the age (as opposed to the age differences) of team members or the time team members had been in their organisations. The professional backgrounds of team members had no significant effect either. Women in the teams we studied were like orchids in winter – rare and threatened: but of itself, gender had no discernible impact on company profitability. Frequency of team meetings also failed to account for any variance.

Figure 3 Predicting company productivity and profitability (Percentage of variation accounted for)

Productivity	
Prior productivity, firm size, sector	43.2
Educational level, age diversity, team tenure	17.8
Team processes	8.6
Total	69.6
Profitability	
Prior profitability, firm size, sector	12.4
Educational level, age diversity, team tenure	37.4
Team processes	16.2
Total	66.0



Women in the teams we studied were like orchids in winter — rare and threatened: but of itself, gender had no discernible impact on company profitability.

Questioning the teams

The data we studied on the composition of teams – educational qualifications and age, for example – are pretty easy to collect, and we found clear evidence of the impact (or lack of it) of these factors on corporate profitability. But such factors don't tell the whole story. We wanted to examine more subjective issues such as the functioning of the teams to see whether these might also have an impact on a firm's profitability. So we asked all team members in our study to complete a questionnaire. We first asked them to comment on the extent to which they felt team members were clear about their overall team objectives, the extent to which they were committed to them and the value of the team's vision or objectives.

We also wanted to know what team members thought of the levels of participation in the team. This included the extent to which team members shared information with each other, whether they felt that all team members had influence over decisions that were taken, and the frequency with which team members interacted. This is a questionnaire which we have used in a very wide variety of organisations and which we have validated by comparing video and audio recordings of team meetings with team members' questionnaire responses.

The questionnaire also taps task orientation, or the extent to which team members monitor each other's performance, as well as overall team performance in order to provide feedback and ensure excellent performance. It includes questions covering the extent of the commitment to excellence and tries to measure the extent to which the team incorporates a critical orientation to decision-making and performance (sometimes called 'constructive controversy').

Finally, the questionnaire seeks to measure support for innovation – the extent to which team members support each other's ideas for new and improved ways of doing things. Team members are asked whether they feel they get verbal support for their proposal and, perhaps more important, asks if they feel their colleagues offer time, resources and effort to help implement their proposals for innovation.

We have used this measure in a variety of settings, ranging from top management teams in BBC TV to NHS Trusts and primary health care teams: and we have shown that it can predict the innovativeness and effectiveness of teams as well as the mental health of team members.

So how did they do?

Team members in our manufacturing company study scored well in comparison with teams in other organisations we have studied, except (alarming!) in relation to support for innovation (see Figure 4 above). Their highest scores were on the scale measuring objectives, and the lowest on the measure of support for innovation. It may be that the people who make up these teams are by nature

Figure 4 Functioning of top management teams

Clarity of and commitment to objectives	3.94
Participation	3.65
Task orientation	3.51
Support for innovation	3.49

critical and conservative in their orientations. Intelligent people usually do bring incisive critical orientations to problems and proposals. The problem with this approach is that many young, tender ideas are never nurtured to the stage of implementation because they are cut down while still weak. The history of science and the study of successful R & D teams suggests that the most effective are those which encourage early and reject later. In successful teams, members tend to look for confirmation and support for each other's ideas in the early stages of the process, and only much later to bring a more critical approach to innovation proposals which might result in the ultimate rejection of some of them.

More linkage

Perhaps even more significantly, we found that these team processes (objectives, participation, task orientation, and support for innovation) also predicted company



Many young, tender ideas are never nurtured to the stage of implementation because they are cut down while still weak.



productivity and profitability. Again we took out the effects of prior company performance, so we know it is not that because the company is doing well that team members feel they function well together. These team processes enabled us to predict just over 16% and nearly 9% of the variation between companies in profitability and productivity respectively. The clearer the team's objectives, and the higher the levels of team participation, task orientation and support for innovation, the better did the companies perform. So, both team composition and team processes predicted performance.

Of course we looked for overlap between these two sets of predictors and found that the educational level of team members did to some extent account for quality of team functioning. Better-educated teams functioned more effectively in relation to the four team process factors we described above. The same alternative explanations we offered apply here too. Perhaps the more intelligent team members are better able to manage the complexities of working effectively in a team (and in such a challenging team as the top management team of a company). The other explanation (competing or complementary) is that the education of these team members enabled them to work more effectively in teams. So perhaps the sessions on team working or just the general level of skill development in MBA and other business-related courses enabled team members to work together more effectively. This too is a question for further research.

But when we combined our analyses, we found that characteristics of top teams (education, age diversity and team tenure) had effects which were largely independent of team processes (objectives, participation, task orientation and support for innovation) in predicting the profitability and productivity of the companies. Taken together (and with only with a small degree of overlap) both groups of factors independently predicted a very significant variation in companies' profitability (43%) and productivity (20%).

A further interesting observation relates to an article we contributed to *CentrePiece* a year ago (see 'People Power' *CentrePiece* Autumn 1998, p2). There we reported that the average satisfaction level of employees in companies predicted company productivity, though not company profitability directly. Here we report that top management team characteristics predict company profitability quite strongly, but company productivity relatively weakly. And this makes sense. Employees generally have direct control over their work performance and productivity, but little direct influence over profitability. Top management teams in contrast have indirect influence over productivity, but much more direct control over investment decisions, purchasing decisions, pricing decisions and competitive strategies (in short, the factors which most influence profitability). These findings therefore have a persuasive symmetry.

The prescription for success

What are the practical implications of our research? First, make sure that you hire well-educated people to run companies. It is probably worth spending the money on MBA-trained people. Second, try to ensure some stability and continuity in the top team. Third, where there is significant age diversity, make sure that the team members devote more effort than usual to improving communication, reducing conflict and increasing their level of reflection about team performance and team functioning. And finally, encourage team members constantly to reflect, individually and collectively, upon their team objectives, participation (communication, decision-making, and meetings), task orientation (team self-assessment and appraisal, as well as external feedback), and support for innovation. Reflection should be accompanied by a resolve to make changes as appropriate. Such 'reflexivity', we have found, is one of the very best predictors of team functioning in organisations, but also one of the most neglected strategies for improvement at work.

Ultimately, the profitability of companies depends upon the skills of the top team, its collective wisdom, and the ability of the human beings that make up the team to work effectively together for the profitability of the company and the interests of all its stakeholders. Our research has clearly demonstrated effective teamwork at the top is critical in determining whether a company succeeds or fails.



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After Cologne

Peter Kenen examines the G-7 plans for international monetary reform which were discussed at the Cologne Summit this summer.



The G-7 governments appear to believe that they have finished the task begun at the Halifax Summit in 1995 – refashioning the international financial system to reduce the risk and consequences of future financial crises. In their report to the Cologne Summit, the G-7 finance ministers summarised their previous work and made some new proposals. They promised to monitor implementation and “report on progress, as necessary.” They nevertheless implied that they have completed the blueprint and that the masons and carpenters should take over from the architects.

Measured against the rash promises of some national leaders and radical proposals of some academics, the G-7 blueprint is modest. Measured against the difficulty of reforming a system in being – a task far harder than the one faced by the Bretton Woods Conference in 1944, which met while the world was still at war – the new blueprint is ambitious. It does not call for razing and rebuilding the international financial system. It does propose a major renovation. Yet the blueprint is long on process and principles and short on carrots and sticks.

Those who have followed closely the official discussion of these issues, from working group to working group and summit to summit, will not find many new ideas

in the G-7 report. Much of the report lists steps already taken: the negotiation of the New Arrangements to Borrow (NAB), the introduction and recent revision of the Fund’s Special Data Dissemination Standard (SDDS), the establishment of the Financial Stability Forum to facilitate cooperation among financial regulators, and the promulgation of codes and standards aimed at strengthening the financial systems of emerging-market countries and promoting transparency in the conduct of fiscal, monetary, and financial policies.

On the difficult issue of compliance with codes and standards, however, the report is vague. It attaches “high priority” to several steps – but they are tentative. It asks the IMF to develop a system to monitor implementation and to use the codes and standards in determining Fund conditionality. But it does not resolve a fundamental problem. Few countries can be expected to comply completely with the codes and standards, and assessments of compliance will therefore involve finely calibrated qualitative judgements. It will be easy enough to spot egregious shortcomings and, in determining conditionality, to require remedial action. Even in those cases, however, effective action will take time – more time than the normal duration of an IMF program.

The report makes other recommendations aimed at obtaining compliance, but they raise similar problems. Regulators in the industrial countries are urged to consider a country’s compliance with the relevant standards when asked to approve market entry by that country’s banks. The revised Capital Accord proposed by the Basle Committee would end preferential risk weighting of short-term loans to banks in emerging-market countries and would allow for punitive risk weighting of loans to banks in countries that do not comply with the relevant standards. But where will the regulators draw the line – how will they define compliance – and will

The blueprint is long on process and principles and short on carrots and sticks.

they agree on the right place to draw it?

There is implicit recognition of these problems elsewhere in the G-7 report and of the time it will take for countries to comply with the new codes and standards. It says that “controls on capital inflows may be justified” until countries have strengthened their institutional and regulatory regimes, and it goes on to acknowledge that, where those regimes are weak, it may be appropriate to limit the foreign-currency exposure of the banking system. But it hedges its cautious approval of capital-inflow controls by asking the IMF to study further the benefits and costs of those controls.

It is by now widely agreed that pegged or quasi-pegged exchange rates played a pernicious role in the evolution of recent crises. In the run-up to the Asian crisis, they encouraged the imprudent accumulation of foreign-currency debt. With the onset of the crisis, they encouraged an excessive draw-down of reserves, which then made it impossible for the crisis-stricken countries to keep their currencies from going into free-fall. In the wake of the crisis, large currency depreciations combined with large foreign-currency debts to produce widespread insolvencies in the financial and corporate sectors, and these in turn contributed importantly to the sharp contractions of output that occurred in many crisis-stricken countries.

Yet previous G-7 reports and

Few countries can be expected to comply completely with the codes and standards, and assessments of compliance will therefore involve finely calibrated qualitative judgements.

But where will the regulators draw the line — how will they define compliance — and will they agree on the right place to draw it?

those of other official bodies said very little about exchange-rate arrangements. The report to the Cologne Summit is cautiously agnostic but bolder than any previous report. While the appropriate exchange-rate regime for a particular country will depend on the country’s own circumstances and may vary over time, “the international community should not provide large-scale official financing for a country intervening heavily to support a particular exchange-rate level” unless the level is deemed to be sustainable and certain other conditions are met.

Previous reports dealt at length with the need for private-sector involvement in the resolution of financial crises, but the G-7 report is more explicit and detailed, despite the need to blend an American insistence on a case-by-case approach with a European preference for a rule-based approach. In some cases, it says, emphasis might best be placed on voluntary, market-based solutions. In others, however, more “coercive” solutions may be required. The use of “coercive” is new, moreover, redressing the strong bias in favour of voluntary approaches found in the G-22 report published in autumn 1998, just after the Russian default.

Having stressed the need for differentiation, moreover, the report lists the “tools” available to the international community, involving increasingly coercive solutions. The provision of official financial support could be linked to efforts by a crisis-stricken country to open discussions with its creditors, efforts to seek voluntary commitments from its creditors, efforts to seek specific creditor commitments to maintain exposure levels, and efforts to

restructure or refinance the country’s outstanding debt. A country seeking official assistance might be required to agree to a reserve floor, effectively forcing private-sector creditors to accept a restructuring of their claims. In exceptional cases, a country may even impose capital controls to achieve a payments suspension or standstill.

Finally, the G-7 report edges closer to implementing a recommendation made initially in 1996 by the so-called Rey Report – the inclusion in sovereign debt contracts of “collective-action-clauses” aimed at facilitating creditor coordination and discouraging disruptive action by dissident creditors. It recommends that inclusion of those clauses be regarded as “best practice” in the management of sovereign debt and as a determinant of eligibility for a Contingent Credit Line from the IMF. It also recommends “consideration” of two more possibilities – including collective-action-clauses in sovereign debt contracts enhanced by multilateral development banks and “possible inclusion” of those clauses in the debt instruments of the G-7 countries themselves – but stops short of promising that this will be done.

Is there thus reason to hope that the official community is ready at last to close the gap between its rhetoric and actual behaviour?

The Rey Report endorsed the same general principles contained in the current G-7 report. Written soon after the Mexican crisis, it warned debtor countries and their private creditors not to expect “to be insulated from adverse financial

continued on page 32

It is by now widely agreed that pegged or quasi-pegged exchange rates played a pernicious role in the evolution of recent crises.



Bridging the productivity gap

It's widely accepted that the most innovative – and productive – economies are those which spend most on research and development. But new research at the CEP suggests there's another important way in which R & D can bring about productivity improvements, by enhancing the ability to imitate.





by Rachel Griffith, Stephen Redding, and John Van Reenen

There's an old joke which says that whenever two economists get together they will have three opinions between them. Yet there is a remarkable degree of consensus on some of the factors which have been responsible for Britain's disappointing post-war economic performance. Again and again, the poor productivity record of the UK comes up as a critical failing. In the past twenty years there have been enormous absolute improvements in Britain's productivity performance. There has been an improvement in relative performance. Nevertheless the level of UK productivity still lags behind that in the US and some continental European economies in most industries. This may be the result of a number of factors: underinvestment in physical and human capital, as well as in ideas.

More spending on research and development (R&D) will boost productivity through innovation: that much is now widely accepted. But our new research offers strong evidence that R&D can also improve productivity by helping firms and economies to benefit from advances already made elsewhere. This has important implications not just for the UK economy but for many other industrial and developing countries.

The productivity gap

Productivity in the UK manufacturing sector still lags well behind levels in the United States and some continental European economies. A report from the McKinsey Global Institute in 1998 found that manufacturing productivity in the United Kingdom was approximately 60% of that in the United States, for example. Productivity is an important determinant of per capita income and its growth, so this gap matters. Closing it, or at least narrowing it, could bring increases in income per capita in the future – although in order to do so we may have to invest today for gains tomorrow. The UK government has set up a new Performance and Innovation Unit – located in the Cabinet Office – to tackle this problem directly.

Traditionally, the principal contribution of R&D activity has been judged to be in helping firms – and economies – stay at the technological frontier: to help them keep ahead of the competition. Productivity improvements inevitably flow from such advancements. Yet more recently, some theoretical studies have suggested that R&D may contribute to productivity improvements in another way – by helping firms to copy what others have already achieved. The term 'absorptive capacity' is used to illustrate a firm's ability to understand and then assimilate what other competing firms have already achieved, and more spending on R&D might be thought to increase this. (As every researcher knows a large part of one's own research time is spent on finding out what other people have already done!) At the international level, R&D may thus have an important part to play in helping economies catch up with the leaders. Since most studies have tended to focus solely on the effects of R&D on innovation, they may underestimate the wider potential benefits of R&D.

The two faces of R&D

The idea that innovation is an important source of productivity growth goes back to the writings of Joseph Schumpeter in the 1940s. He argued that the prospect of monopoly profits provided the incentive for private firms or individuals to invest resources in trying to discover or develop new technologies. These ideas have recently been formalised in the body of research on growth, where innovation can mean either the introduction of new product varieties or successively higher qualities of an existing product – both of which will lead to productivity improvements.

Innovation is important. But productivity improvements can also come from imitation or technology transfer (between firms or economies), and indeed may be a more important source of such improvements for economies not at the technological frontier. Nathan Rosenberg argues that three of the great technical developments in European history – printing, gunpowder, and the compass – are all instances of





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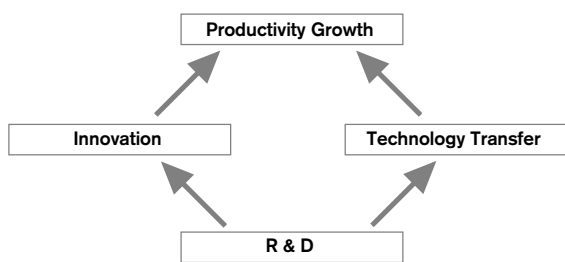
successful technological transfer. He goes on to say that 'It may be seriously argued that, historically, European receptivity to new technologies, and the capacity to assimilate them whatever their origin has been as important as inventiveness itself.'

But technology transfer is not necessarily automatic and is contingent on levels of knowledge and expertise in the firm, industry, or country to which the technology is being transferred. Some knowledge is 'tacit' or hard to acquire without direct experience. By actively engaging in research and development in a particular intellectual or technological field, one acquires such tacit knowledge and can more easily understand and assimilate the discoveries of others. Even then, the transfer of technology may be far from automatic. Take the example of the jet engine: when plans were supplied by the British to the Americans during the Second World War, it took ten months for them to be redrawn to conform to American usage. In other words, R&D is as crucial for technology transfer as for innovation.

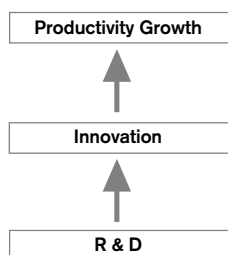
Figure 1 (below) shows the two routes by which investment in R&D can generate productivity improvements. In all economies behind the technological frontier, innovation and technology transfer each constitute potential sources of productivity growth. If an economy already possesses the state of art technology, innovation provides the sole source of productivity growth. Investments in R&D now only affect productivity growth in so far as they generate innovations.

Figure 1: Innovation, Technology Transfer, and R&D

Panel A: An economy behind the technological frontier



Panel B: An economy that already possesses the state of the art technology.



In practice, of course, some economies may be behind the technological frontier in some areas and at it in others.

Putting flesh on the bones

That's the theory: where's the evidence? We set out to test the viability of the framework outlined by using data on fourteen sectors in twelve OECD countries since 1970. These are listed in Table 1 below. We looked at data on productivity growth, a measure of the potential for technology transfer, and a way of quantifying the contribution of R&D to innovation and technology transfer.

Our measure of productivity growth is based upon the idea that there is a production function determining the number of units of output produced for a given level of inputs of factors of production. Output will grow as conventional inputs – labour and capital – grow. But output growth will also depend on how efficiently people and machines are used together. This measure of efficiency is called 'total factor productivity' (TFP).

Table 1: List of industries and countries used in the empirical study

Industries

1. Food, beverages and tobacco
2. Textiles, apparel and leather
3. Wood products and furniture
4. Paper and printing
5. Chemical products
6. Non-metallic minerals
7. Primary metals
8. Fabricated metals
9. Metal products
10. Non-electrical machinery
11. Electrical machinery
12. Transport equipment
13. Instruments
14. Other manufacturing

Countries

1. Canada
2. Denmark
3. Finland
4. France
5. Germany
6. Italy
7. Japan
8. Netherlands
9. Norway
10. Sweden
11. United Kingdom
12. United States

Innovation is important. But productivity improvements can also come from imitation or technology transfer (between firms or economies), and indeed may be a more important source of such improvements for economies not at the technological frontier.



The policy debate has thus far largely been concerned with labour productivity (as measured for example by output per hour worked). While straightforward and intuitive, this is a measure of the productivity of one factor of production alone. It doesn't tell us whether output per worker is high because of the high levels of inputs (eg capital) or because of high levels of technical efficiency (TFP).

TFP by contrast provides a measure of the productivity of all factors of production. Even with fairly general assumptions about the nature of the technological relationship and market structures, it is possible to measure the rates of productivity growth in the individual industries of a particular country. We have used a measure that essentially compares the rate of growth of output with the rate of growth of factor inputs, where the rate of growth of each factor input is separately and appropriately weighted.

We measured the potential for technology transfer by the size of the technology gap – the distance between each economy's level of productivity in a particular industry and the level at the technological frontier in that industry. There are a number of ways in which in principle one might model the technological frontier. Perhaps the most obvious is to treat the economy with the highest level of productivity in a particular industry as the frontier. For each industry we can thus calculate an economy's level of productivity relative to the productivity leader. The greater the distance between any one economy's level of productivity and that

in the leading economy, the greater the potential for technology transfer.

Measuring relative levels of productivity can be done in the same way as measuring productivity growth – by comparing the relative levels of output to relative levels of factor inputs, where factor inputs are weighted appropriately. In practice, though, a number of different measures are possible, depending on exactly how the inputs of the factors of production are calculated and on the assumptions made about market structure. So we looked at four different measures of rates of growth and relative levels of productivity; these are listed in Table 2 (below) alongside the assumptions they reflect (e.g. how skilled the workforce is).

Where does R&D come in?

We measured R&D activity in each industry by the ratio of R&D expenditure by business to total output. In order to assess the contribution of this R&D activity to both innovation and technology transfer we looked at the growth in productivity as a function of several factors – including the level of R&D spending and the productivity gap. We allowed the effect of the gap to be different for industries with different levels of R&D spending. Our results were striking:

■ R&D does generate productivity growth through innovation and so R&D activity has a direct effect on rates of productivity growth.

Table 2: Four alternative measures of TFP

Each takes a different measure of inputs into the production process and makes a different assumption about market structure

- (a) Market structure: perfect competition
Labour input: hours worked
Capital input: no correction for degree of capacity utilisation
- (b) Market structure: perfect competition
Labour input: hours worked adjusted for skill composition of the workforce
Capital input: no correction for degree of capacity utilisation
- (c) Market structure: imperfect competition
Labour input: hours worked adjusted for skill composition of the workforce
Capital input: no correction for degree of capacity utilisation
- (d) Market structure: perfect competition
Labour input: hours worked adjusted for skill composition of the workforce
Capital input: correction for degree of capacity utilisation





The main benefits from trade came from the increased pressure to adopt best and most efficient practices – not because it stimulated firms to work harder to innovate.

■ Productivity growth was higher when the level of productivity in the leader was high relative to an economy's own productivity, suggesting a role for technology transfer and convergence within the OECD economies.

■ No matter what the size of the productivity gap, it has a greater effect on rates of productivity growth when R&D activity is high.

For all four of our measures of productivity growth in Table 2, we found that R&D investment plays an important part in stimulating both innovation and technology transfer. This provides clear support for the idea that there is an important second role for R&D in enabling firms and individuals to understand and assimilate existing technologies. Studies that focus solely on the innovative role of R&D investment are therefore likely to underestimate the true benefits of R&D in countries which are not technological leaders.

Trade matters too...

Of course, many other things can affect productivity in addition to R&D. Trade, for example, can stimulate faster innovation or learning in a number of ways. Imports from the technological leader will provide new knowledge embodied in the most technologically advanced new machines. Lowering tariffs would increase trade and product market competition and thus force firms to adopt best practice in order to survive. Increased trade with the less developed nations might also push developed countries into putting more effort into innovation to help preserve their competitive edge.

We found clear evidence that trade matters in addition to technology in stimulating productivity growth. Countries which were more open (especially to the technological leader) caught up faster. But the main benefits from trade came from the increased pressure to adopt best and most efficient practices – not because it stimulated firms to work harder to innovate. Higher R&D spending was what provided firms and economies with new products and processes.

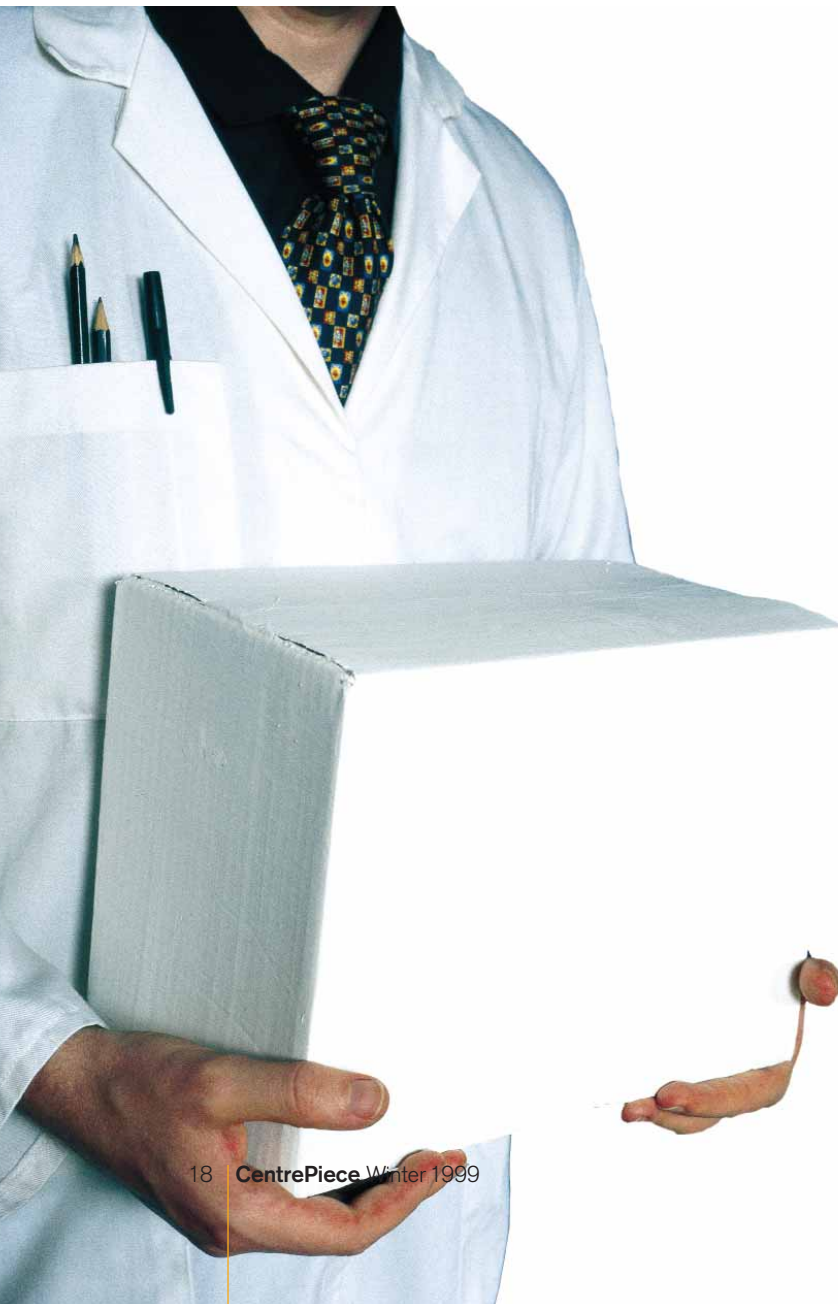
Human capital is important too. As one might expect (and as other studies have shown) those countries which have invested more in schooling tend to absorb new technologies more quickly than countries with lower levels of educational investment and attainment.

So why isn't everybody doing it?

Our research provides compelling evidence that globalisation and innovation are important. More spending on R&D can help economies catch up with the technological leaders as well as pushing forward the technological frontier. There are clear benefits in terms of productivity growth and therefore economic welfare. So why isn't business in countries like Britain, which lags behind in the productivity race, spending far more on R&D?

The answer isn't all that hard to find. As Flaubert remarked in his dictionary "Inventors – They all die in the hospice. Somebody else profits by their discoveries; it is not fair." The benefits of R&D are often not enjoyed by those who do most of the work. But this applies much more in the case of R&D aimed at innovation. R&D which is intended to help firms catch up with their competitors does bring direct benefits to those who invest in it. There ought to be a big private incentive for companies to invest in this area of R&D.

That firms don't do more of it, therefore, is more likely to reflect the difficulty of raising sufficient finance or the lack of



Countries which have invested more in schooling tend to absorb new technologies more quickly than countries with lower levels of educational investment and attainment.

the appropriate skills necessary to take advantage of the knowledge gained through R&D – or both. In order to try to tackle the financing gap, the British government is considering the introduction of R&D tax credits for those small firms where the financial problems are thought to be greatest. It has also encouraged various schemes to aid the start-up of high tech companies. But the amounts on offer are small: £150m has been earmarked, compared with total R&D spending of £7 billion a year. Large firms account for the overwhelming bulk of R&D spending.

A solution for Britain?

But directing taxpayers money directly at R&D may not be the best solution. Government efforts may be more effectively directed at improving the skills infrastructure. The UK regularly comes near the bottom of the league tables of developed countries in mathematics and sends fewer of its young people to college than the USA, for example. The best policy for encouraging technological advancement, and thus productivity growth, is more likely to be by improving the skills level of the workforce from which firms have to draw.

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Breaking the link

Has the employment contract had its day?

This summer, the European Commission published the findings of the Supiot inquiry into the reform of European employment law. It recommended developing intermediate forms of contract between the 'standard' employment relationship and self-employment. David Marsden of the CEP reflects on the Supiot report recommendations and explores how the development of new contractual forms could release potential reserves of economic activity and help tackle unemployment.

Employment laws do not create jobs.' Such is the conventional wisdom of the last two decades – a view apparently reinforced by the OECD. When they examined the international evidence as to whether different types of policies have any effect on jobs and labour market performance, OECD economists concluded that it was, at best, uncertain. So it's puzzling that the European Commission study group on employment patterns and the reform of labour law should have placed so much emphasis on the need to reform the basic principles on which labour law has been built over the last half century. Or is it? When we examine the group's findings more closely, there's a good case for saying that this collection of leading labour lawyers, led by Alain Supiot, has shown considerable insight. Instead of looking at individual employment promotion policies, we need to look at the nature of the legal employment relationship itself. This institutional innovation laid the basis for the huge expansion of economic activity this century, but it may now have outlived its usefulness.

Revisiting the employment contract

Currently, nine out of ten workers in OECD countries are engaged as employees with contracts that are open-ended both in the nature of the work covered and the duration of the contract. Of the other 10% of workers, some are classed as self-employed, and others are on various forms of 'non-standard' employment contract. Most part-timers also have open-ended contracts.

Yet such open-ended contracts weren't always the norm. In the late nineteenth and early twentieth centuries, various forms of labour sub-contracting were widespread, and depending on the country, it has really only been since the second world war that this form of legal employment relationship has consolidated its pre-eminence. The open-ended contract has brought many advantages for employers and employees alike. These benefits have not been unqualified, however, and they may now be outweighed by the disadvantages. Analysis of the costs and benefits of this particular employment relationship can point the way to more productive forms of job creation.

The conventional employment contract is a remarkable social and economic institution, as important as the invention of limited liability for companies. It solves a very difficult economic question: how to enable open-ended cooperation between self-interested parties – workers and employers – given that each knows more than the other about important aspects of their joint work, and that the gains from cooperation also imply costs of separation.

Sub-contracting had worked well when the outcomes could be easily defined and monitored. But it reached its limits as technical change and the increasing complexity of production meant firms wanted more direct control over the work process and to tailor work tasks more closely to their own

organisational needs. To do this, they needed a new contractual form: the open-ended employment relationship.

Overcoming suspicion

For workers who distrusted the intentions of potential employers, an open-ended contract would have seemed a recipe for exploitation: and so it only became acceptable as various protections were incorporated into it. Coase captured its essence: writing in 1936 he noted that the open-ended contract gave employers the authority to define workers' tasks *ex post* 'within certain limits'. Coase recognised that these limits could not be set by exhaustive job descriptions with complex contingency clauses. Apart from the cost of writing such contracts, they would not work because their very detail would create endless scope for job-level bargaining. The solution that gradually emerged was to use certain kinds of work rules to identify the limits of managerial authority and of employees' obligations.

To be effective, such rules have to be simple enough to be understood and applied by ordinary workers and their line managers, far from the help of personnel departments and legal advice. The earliest such rules tended to identify certain kinds of work tasks. One such rule was the 'work post' rule commonly applied in French and American patterns of bureaucratic work organisation, as in mass production and large offices, and which assigns an individual worker who is held responsible for them. Another approach has been to identify the scope of jobs

In the late nineteenth and early twentieth centuries, various forms of labour sub-contracting were widespread.



by taking the tools or materials associated with certain tasks, as was common under British and American craft demarcation rules. Although bureaucratic work organisation was originally a management idea, the work posts very quickly transformed into a defensive mechanism for workers. Defining people's jobs also makes clear the limits on their obligations.

For mutual benefit

In more recent years, work rules have increasingly focused on the function rather than the individual task, but while more flexible, they also require higher levels of trust and more complex relationships between work groups and management. Well-known examples can be found both in the flexible work organisation patterns of large Japanese firms, where the 'competence ranking' rule often guides the distribution of tasks within work groups, and in the 'qualification' rule, which assigns work broadly according to its skill requirements, as is common in Germany. Both these approaches establish a much looser relationship between individual tasks and workers' jobs: they improve the flexibility with which tasks are accomplished, but they do so by focusing on functions related either to production needs or to workers' skills. These rules help restrain exploitation by either workers or employers, and so make the open-ended employment relationship a viable and attractive form of contract. Labour law and collective agreements have

Firms need to be increasingly flexible in the way they are organised, so that they can respond to swiftly moving markets and technical change.



helped reinforce these work rules.

Institutionalising the employment relationship in this way has enabled modern firms to develop the organisational potential which has contributed so much to the economic expansion of the last hundred years. It has enabled the development and mobilisation of human skills and organisational capabilities in a way that the sub-contracting systems of the nineteenth century could not.

Time to move on?

Suptot and his EU colleagues think that both firms and workers have now exhausted the potential of the open-ended employment relationship. The strains can be seen in two ways. Firms need to be increasingly flexible in the way they are organised, so that they can respond to swiftly moving markets and technical change. At the same time, piecemeal attempts to adapt the standard employment relationship by introducing a wide range of special types of employment contract – such as youth contracts, employment and training contracts – have made labour rules more complex and so harder to enforce while not generating extra jobs on the scale anticipated.

It's difficult at present to work out what is actually happening. We know from a range of case studies that firms are experimenting with new ways to organise themselves: network organisations, project-based work, and even re-creating market conditions within the firm itself. Firms also want to be able to move into and out of certain activities, which means radical changes to the structure of their workforces and the skills required of them. At the same time, workers, aware of these rapid changes, feel more insecure, and believe that the implicit contract of long-term employment has been eroded. Paradoxically, however, job tenures have remained remarkably stable; nine tenths of OECD workers continue to be engaged as employees in the conventional open-ended contract; and there has been no clear or uniform international trend towards greater self-employment.

So what is happening?

No doubt part of the explanation is that the case studies are unrepresentative, and the aggregate statistics are measuring the wrong things. But it is also possible that the conflicting evidence reveals a pent-up demand from firms, at least, for more flexible employment forms that cannot be satisfied by either the standard employment relationship or by current forms of self-employment. At present, employment offers firms the flexibility of *ex post* definition of work but the protections deprive them of the flexible organisational structures they seek. Self-employment offers them the latter kind of flexibility, but at the considerable cost of needing to define work tasks *ex ante*. The middle ground between the two is also unsatisfactory because it fails to provide either party with the flexibility and protections they need. Opening

Institutionalising the employment relationship in this way has enabled modern firms to develop the organisational potential which has contributed so much to the economic expansion of the last hundred years.



up the middle ground is partly a question of labour law and social insurance, and partly one of appropriate work rules.

The Supiot report argues that firms and workers are held back from more flexible contractual forms because the protections provided by labour law hinge mainly upon the 'standard' open-ended employment relationship, as do the protections offered by our social insurance systems. Frequent job changing is heavily penalised both by limited access to employment rights, which usually depend on the length of time a worker has been in a job, and reduced pension rights. Supiot and his colleagues have therefore been exploring other forms of employment relationship that would support shorter duration jobs, and even multiple job holding, thus enabling both firms and workers to develop more fluid, short-term relationships. 'Activity contracts' are one such option: these would extend employment and social security rights to a much wider range of activities than traditional employment, such as approved voluntary and domestic work. They have also considered the Italian legal concept of 'para-subordination' whereby a person works (part-time) for several employers simultaneously, but this is classed as continuous employment for the purposes of employment rights and social protection.

The need for new rules

Work rules hold the key to regulating new forms of open-ended employment contracts. Little is gained if the new employment forms push firms back towards *ex ante* definition of work tasks and their outputs, and by and large firms have not opted for the self-employment option although it has long been available. Work rules can link workers' abilities and firms' job requirements in one of two ways: they either take job demands and form worker skills around

them, or they take workers' skills as given and organise work accordingly.

Starting with the demands of the job tends to be the way many firms have been traditionally organised: it is this approach which may now have outlived its usefulness - even in the more flexible Japanese-style work systems. Alternatively, working with the skills available has been characteristic of occupational labour markets, and it is likely to be much easier to adapt this approach to the more flexible organisational structures many firms are now seeking. Indeed, when British shipbuilding was at its peak, it was organised on what in modern parlance is a 'project basis' - workers were hired specifically for each new ship. This was possible because of a system of craft labour markets which regulated both training and work organisation. If we look at those areas where self-employment has grown in Britain it has tended to be either for casual labour, or where there are professional or craft skills. This, of course, has echoes of the craft system of nineteenth century Britain.

The more unusual examples of Hollywood and Silicon Valley illustrate how reputation within an occupational community fulfils many of the same functions as long term employment with the same firm. There are two reasons for the success of occupational and kindred skills in this area. First, they enable workers to move between firms and work assignments more easily without a drop in pay. Second, the skill itself and the craft and professional norms learned during training play a key part in regulating work content and work quality. Although the use of expert knowledge creates an information asymmetry between the firm and the professional worker - the worker knows more about his or her skills than the firm - this is partly remedied by the similarity of skills between workers in the same occupation so that firms can learn what to expect from those holding a given qualification.

The new-look labour market

Expanding this middle ground, the areas of economic activity which fall somewhere between traditional employment and self-employment, means broadening the protections of labour law and social insurance as the Supiot report advocates. But we need also to look closely at the development of new forms of occupational markets which make workers rather than jobs the bearers of skills. This appears to be the most promising way of releasing firms' pent-up demand for more flexible organisation structures and more flexible forms of contracting while at the same time offering the prospect of additional job creation. Institutional reform could open up scope for a new economic expansion. It may even offer an alternative path back to long-term full employment without excessive reliance on 'McJobs'.

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Does crime pay better?

New research at the Centre for Economic Performance suggests a link between low pay and property crime. Stephen Machin and Costas Meghir explain.

It's difficult to read a newspaper or turn on the TV these days without being reminded that the crime rate is rising. Of course, journalists love crime stories – they help sell newspapers – and they are prone to exaggerate. But even the Home Office figures show that over a very long period of time, crime rose steadily in Britain – even when you allow for the fact that criminal activity varies with the business cycle. From the late 1970s onwards, the increase was particularly rapid, though it has begun to fall since the mid-1990s.

When they are not actually reporting crime, the newspapers and broadcast media tend to spend a good deal of time trying to come up with explanations for its increase. Unemployment, social alienation and TV violence have all at various times been put forward as theories. But these are often only theories: many armchair pundits don't bother to look for evidence to support their pet thesis. We decided to look at some hard data to test one specific hypothesis: that there is a link between low wages and low growth in wages and rising crime. Police force data in England and Wales provide evidence to support the idea of a link between more rapidly rising property crime and declining labour market opportunities.

Spotting the trend

There are striking – and surprising – international differences in the incidence of crime and its trend. One recent study showed unexpected differences between the pattern of crime in England and Wales and that in the United States. According to police statistics and victim surveys, overall crime rates are actually higher in England and Wales. Robbery, assault, burglary and car theft are all

higher according to 1995 victim surveys. The notable exception to this pattern involves some crimes against the person: the US murder rate is much higher (six times as high in 1996, for example). Even here, England and Wales are catching up. The murder and rape rates rose in the US in the 1980s and 1990s: but they rose even faster in England and Wales between 1981 and 1996, thus narrowing the gap. And property crimes fell in the US over this period, while continuing to rise in England and Wales.

The economic theory of crime

The standard economic approach to crime is a simple one. It states that individuals weigh up the expected costs and benefits from crime, taking into account the probability of being caught, and participate in illegitimate activities only if the expected benefits exceed the expected costs. If an individual is making a choice between work or crime it is clear that a crucial factor will be the level of wages he or she could obtain.

We know from well-documented evidence that the gap between the more highly paid and the lowest paid workers has widened rapidly since the late 1970s. The wages on offer in many new jobs have worsened, suggesting deteriorating labour market prospects for recent entrants, particularly the less skilled. Joblessness among low-skilled workers has also risen. These factors have combined to produce significantly worsening labour market opportunities for people at the bottom end of the wage distribution. According to the economic models, these worsening wage opportunities would lead to a rise in the crime rate. We set out to see if that is what happened.



Police force data in England and Wales provide evidence to support the idea of a link between more rapidly rising property crime and declining labour market opportunities.

Evidence for the prosecution

We began by looking at police force area level data between 1975 and 1996. We concentrated on property crime: this is the sort of crime most likely to correspond with the economic models of crime. Other sorts of recorded crime, such as crimes against the person, often have other motivations which aren't associated with monetary gain. On the incomes side of the equation, we looked at data on hourly wages for workers at the bottom 10% of the wage distribution: those people most likely to be making the crime-work choice at the margin will be those on low wages.

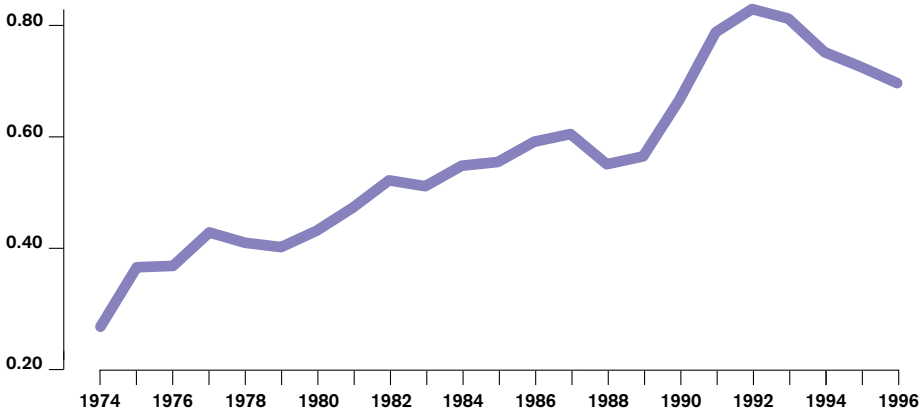
Figure 1 (below) reports what happened to property crime rates between 1975 and 1996. They rose for most of the period, and then started to fall in the mid-1990s. Despite this decline at the end there is nevertheless a large net increase,

up from around 24 crimes per 1000 people in 1974 to around 70 crimes per 1000 people by 1996. Figure 2 (below) shows the (by now) well-known story about wages at lower points in the wage distribution falling behind those higher up the distribution. It shows wage changes (indexed at 1 in 1975) for a person 10% from the bottom of the wage distribution (the 10th percentile), someone in the middle (the 50th percentile), and someone 10% from the top (the 90th percentile). It is very clear that, since the late 1970s, the 10th percentile worker's wage has grown by less than either of our examples higher up the distribution.

A clearcut case?

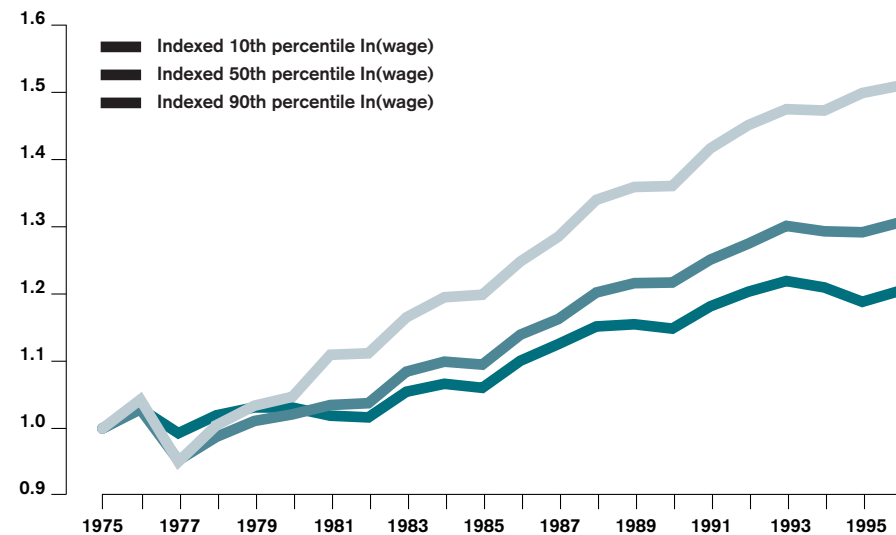
So far so good. We know crime rates rose. We know wage inequality rose. But these findings don't tell us whether the

Figure 1: Property Crime rates in England and Wales, 1974-96



Source: Criminal Statistics.
Note: Property Crime rates are defined per 1000 people

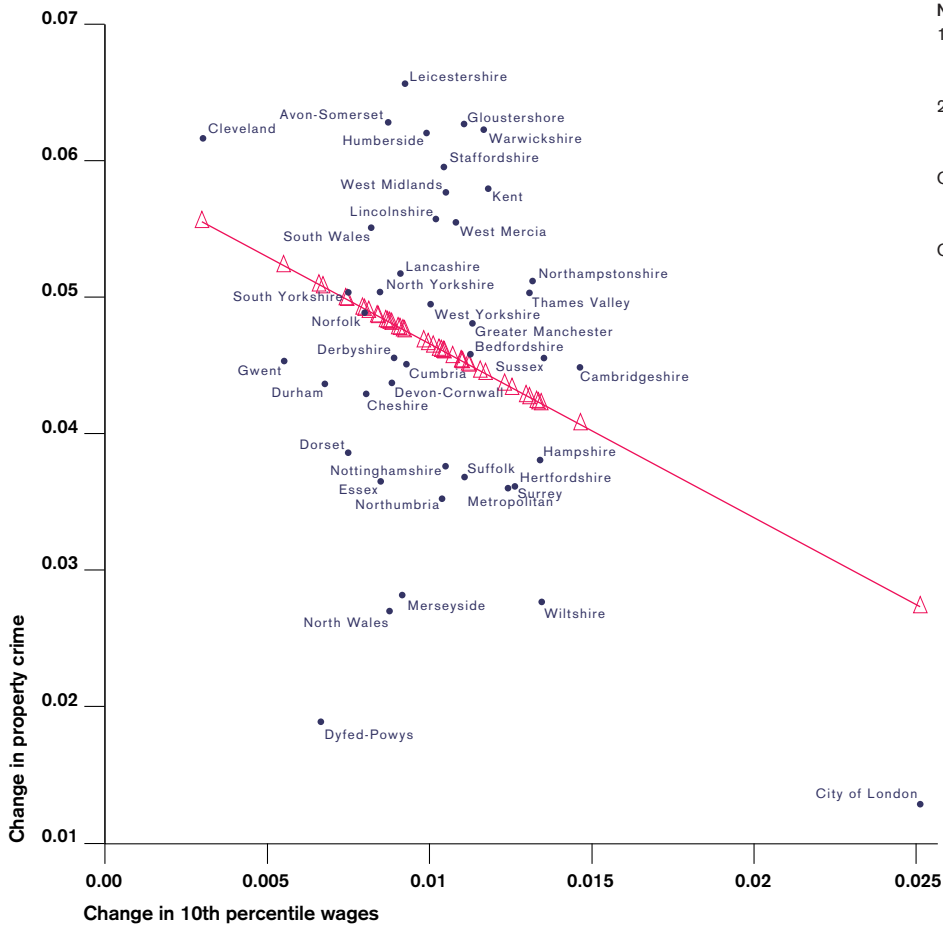
Figure 2: Changes in Wages in England and Wales, 1975-96



Source: New Earnings Survey microdata for all workers England and Wales.
Note: All percentiles are indexed at 1 in 1975



Figure 3: Changes in Property Crime Rates and 10th Percentile Wages Across 43 Police Force Areas in England and Wales, 1975-96



two developments are linked. We want to know whether the rises in crime were most pronounced in those areas where wage inequality also rose more sharply. Figure 3 (above) shows that by using geographically based data we can demonstrate the link. Those areas with lower than average wage growth in the bottom tenth percentile were also those areas with the largest rises in crime. Worsening wages for low-paid workers do therefore seem to go hand-in-hand with rising crime.

Of course, we then tested this finding, a basic negative correlation, to a rigorous statistical testing procedure. We used statistical models that allow us to control for differential conviction rates (to net out differences in the impact of deterrence across areas), previous crime rates (to net out persistence in crime within areas due to peer group or neighbourhood effects) and estimates of the returns to crime. The basic relationship remains: crime rates went up by more in those areas where wage prospects at the bottom end of the wage distribution deteriorated the most.

The models got it right

Economic models of crime that emphasise the role of market wages in the incidence of crime are therefore clearly in line with the experience in England and Wales since the mid-1970s. Property crime rose by more where wage opportunities declined by more. This reinforces the view that what happens in the labour market is important in explaining why individuals turn to crime in the absence of anything better. A buoyant labour market with good wages on offer at all points on the income distribution could therefore be central in reducing the potentially large social costs of crime. Our findings present a significant challenge to policymakers – those concerned with the labour market and those concerned with crime prevention.

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Going cheap on the Net: get your trade-offs here

Economics is about trade-offs, mostly. When economic science has added most memorably and enduringly to public policy and debate, it has done so by taking a cold hard look at who has had to give up what for whom in return for how much. No free lunches.

A wide-eyed approach to life of trying to be all things to everyone might make for good politics. It is almost never ever good economics, says Danny Quah.



Exceptions arise, of course. Take growth and inequality. A long-standing conventional wisdom on trade-offs is that economies grow faster when inequality is higher. There was then a choice. Was it better to shake out the inefficiencies in the workings of your society, and watch the economy grow – but as a result face the possibility that incomes across individuals become more unequal, for those same inefficiencies had been hiding who was performing well and who wasn't? Or was it

preferable to bump along the bottom, but with society strictly egalitarian?

Reality has turned out to be more nuanced. There are societies that have been able to grow rapidly, but at the same time have maintained equality across their inhabitants. Then there are countries like China, the UK, and the US that – at least in popular understanding – have seen rapid growth but with inequality risen dramatically. (To complicate the issue, it must also be said that even as Chinese society became more unequal through the 1980s, its high



Danny Tyson Quah

If economics is about hard choices, where are the weightless economy trade-offs?

rate of economic growth did successfully bring hundreds of millions of people – many times the UK population – out of absolute poverty.) And there are countries that not only have failed to grow but have seen inequality increase as well – an outcome that smacks not only of profound tragedy but of sheer carelessness.

In my last column I commented on greater information dissemination, and how that might be used to get around incentive difficulties in the production and distribution of knowledge-goods in the weightless economy. But if economics is about hard choices, where are the weightless economy trade-offs?

On the one hand this, on the other hand that

One abiding myth about Internet and e-commerce development – parts of the weightless economy if anything is – is that they are indubitably good things. We worry only that there's not yet more Internet use and e-commerce; we fret about how to pay for further subsidising their development: building public Internet kiosks, wiring up all the nurseries in the land, ensuring Internet access to anything that so much as fogs up a mirror held to its nose, whether or not it's wanted. According to this view, the infrastructure surrounding the knowledge-based, weightless economy is a classic public good, and we have nowhere near enough infrastructure.

Another abiding myth is that the opposite is true. All this internet business is just a waste of time. We were much more productive and better off hammering out heavy-metal technology, and we should have kept doing it. Software commodities and Internet use comprise a bill of goods that has been foisted on us by vested interests – who have become grotesquely wealthy due to the ineptitude of the masses. (And this is not even to mention spiritual frivolities like Tomb Raider, Doom, or Webbie

Tookay.) We don't like email and instant communications, and Web surfing just diminishes us. Whatever is valuable and endures should be done slowly with no more than pen and paper, or otherwise carried in heavy bags along the high street. Just look at how productivity worldwide trudged downcast for decades while software and information technology developments galloped on ahead.

Unless an economy has already been downright careless with its resources, any reallocation and adjustment brings costs and benefits. (Have there been economies thus careless? Well, some economists seem to think that countries in the Far East and elsewhere that have undergone currency crises are in exactly such a state. Why else could so many policy recommendations be so unequivocal?) The right view, in normal circumstances, isn't whether more Internet use and e-commerce development, greater software, music, and video entertainment proliferation are good things or bad things. The right question, instead, is where is that trade-off of costs and benefits?

Where should the societies we live in choose to situate along that frontier of possibilities? Unthinkingly repeating myths seems to me a pretty good way of never finding out answers to these questions.

Information, information everywhere

All the information that we generate, inadvertently, when we participate in the knowledge-driven economy can be used to help get around inefficiencies in the workings of the weightless economy. This seems an unalloyed good thing. If anything, since there are likely to be associated positive network externalities, quite probably we are not sufficiently promiscuous with our personal data, and should be encouraged to reveal even more information. Perhaps, as some web-service firms now do, the government could pay everyone to

Unless an economy has already been downright careless with its resources, any reallocation and adjustment brings costs and benefits.

surf the Web more, and openly so. But does it raise issues on the other side of the trade-off?

Stepping outside economics, social observers have no difficulty answering Yes to this question. In their view, information promiscuity ought to engender wide public concern and debate: loss of privacy, compromised national security, infringed civil liberties, surveillance by a (potentially oppressive) police-state. As recent events in Central Europe and the Far East have demonstrated, such fears are not unfounded.

These are large political and ethical questions, and an economic analysis of them would be appropriate. But this isn't the place for that. Instead, I want to consider here a much smaller, preliminary question that when pushed might get us eventually to such an investigation. As previous columns have emphasised, a constant tension in all activity that produces infinitely-expandable information is that between *ex-ante* incentives and *ex-post* efficiency. Formal organisations for intellectual property – patents, copyrights, trade secrets – acknowledge this, and settle on some transient *ex-post* inefficiency, through monopoly operation, in exchange for some *ex-ante* incentive provision.

When we generate information by leaving electronic footprints through websurfing or DNA traces through medical examination, the activity is, in essence, also creation of intellectual property. We might not have to strain as hard as scientists in a genetics research laboratory or a mathematician developing a new encryption algorithm, but that is irrelevant. (And who knows, they're probably having fun as well doing what they do.) Recognising the positive benefits of our handing over that private information is, in one sense, the same as acknowledging the social efficiencies that would materialise from weakened intellectual property rights. Where relevant, the same economics should apply.

Our collective heritage?

A poster child for these weightless-economy tensions can be seen in the pattern of ongoing developments in DNA and genetic research worldwide. If there is doubt that the latter are, indeed, part of the weightless economy, consider the following hypothetical example. Whatman PLC is a firm that specialises in "separations technologies". In June 1999, its market value doubled in three working days, and has since continued to rise. The reason for this? Whatman had applied for patents on how genetic material is stored; in particular, it then had perfected a reliable technology for storing human DNA – our constant companion, the ubiquitous bitstring – on a piece of paper. Previously, the most widely-used method involved blood samples in large refrigeration units, an expensive and irrelevant technology when what is essential is underlying information sequence. As throughout the previous columns, it is not the storage container that provides value; it is the encoded weightless data.

Genetic information matters because, more and more, fresh commercial development of drugs and pharmaceuticals relies on accessing chemical landmarks in a map of human DNA. Many common but recalcitrant illnesses – depression, Alzheimer's, diabetes, arthritis, breast and prostate cancer – are either suspected or known to have underlying genetic causes. Cataloguing the genetic variation across people is then useful on at least two fronts. In the small, medicine can be personalised, with greater effectiveness due to treatment being tailored to particular individuals. In the large, understanding the linkages between specific individuals within an entire population allows faster insight into the genetic causes of specific ailments. When an average product costs US\$500m in R&D to bring to market and creative destruction relentlessly reduces the duration of



One abiding myth about Internet and e-commerce development – parts of the weightless economy if anything is – is that they are indubitably good things.

monopoly power, every little competitive edge helps.

An immediate parallel with software production becomes apparent: users and producers meld. People who draw on the expertise of the drugs-producing sector supply back their genetic information for subsequent improvements of the product. Users of commercial and GNU software provide in return data on likes, dislikes, proclivities for further refinements on the current release. But just as scientists, researchers, and other weightless-economy produce generators seek compensation for their activities, shouldn't the general public be similarly rewarded? We have formal intellectual-property institutions for the former; what compensates the latter? What are efficient ways to organise this generation of information, genetic or otherwise?

One argument is that inadvertent serendipity engenders no explicit reward. A research scientist or a software engineer consciously makes a choice to do something other than become a financial analyst. If society did not provide appropriate incentives, we would run out of such knowledge-economy producers. On the other hand, the DNA information in an individual or across a population, the oestrogen boosters in Thai plant roots, fertility hormones in the urine of European nuns, contraceptive agents in wild Mexican yams, are all there by accident – no one gave up a well-paying job to generate them. They should, therefore, form part of the collective heritage of humanity. There should be no trade-off between *ex-ante* incentive and *ex-post* efficiency when we exploit these.

An Icelandic lesson

This reasoning might be fine as a first organising principle, but the practicalities of plundering that common heritage does require messy apportioning of property rights and rewards. Iceland has now become a

Illustration: Jo Burt

Danny Quah

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justly-famous example. The natural experiment that is the genetic makeup of Iceland's relatively homogenous population allows medical insights into illnesses and cures unavailable elsewhere. Pharmaceutical companies and researchers want that national database set up and accessible. Some want monopoly rights over those data, in return for collecting and processing; others might prefer a joint venture, possibly with government involvement, that then releases those data for widespread use. A number of Icelanders worry about the firesale on their individual privacy and their national heritage.

What is an appropriate, i.e. economically efficient system of rewards in such a situation? In all the argument over the loss of Iceland's national identity, individual privacy, the ethics of state versus individual rights on information – an argument that a number of observers suspect will be replicated as such weightless-economy activity becomes more and more pervasive – the economic trade-off needs to be clarified and explained to all.

The genetic makeup of Iceland's relatively homogenous population allows medical insights into illnesses and cures unavailable elsewhere.

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After Cologne

Continued from page 13

consequences by the provision of large-scale official financing in the event of a crisis". But when the Thai crisis provided an opportunity to drive that warning home, the international community chose once again to provide large-scale financing. And it has done that repeatedly – in the Indonesian, Korean, Russian and Brazilian cases. Korea's interbank debt was rolled over, but that was done belatedly and with a guarantee from the Korean government – which was in turn backed up implicitly by large-scale official financing. In short, private-sector involvement has not yet been used to substitute decisively for official funding.

Unfortunately, the G-7 report does not declare clearly and forcefully an end to the era of "exceptional" official financing. When, indeed, it warns that a country should not expect to obtain large-scale official financing if it intervenes heavily to defend a pegged exchange rate, the report appears to imply that countries which do not make this mistake can still expect to obtain it. There is thus no reason to believe that the Fund and its key members are ready to forswear the use of large-scale financing or even to identify clearly the cases and conditions in which they will provide it. Unless and until they do that, a country facing a currency crisis is apt to draw down its reserves and hope that its problems will go away – like Mexico in 1994 and Thailand in 1997. And the international community is apt to do the only thing it can do quickly – furnish large-scale financing to contain the crisis.

The G-7 report does not declare clearly and forcefully an end to the era of "exceptional" official financing.

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The back issues



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